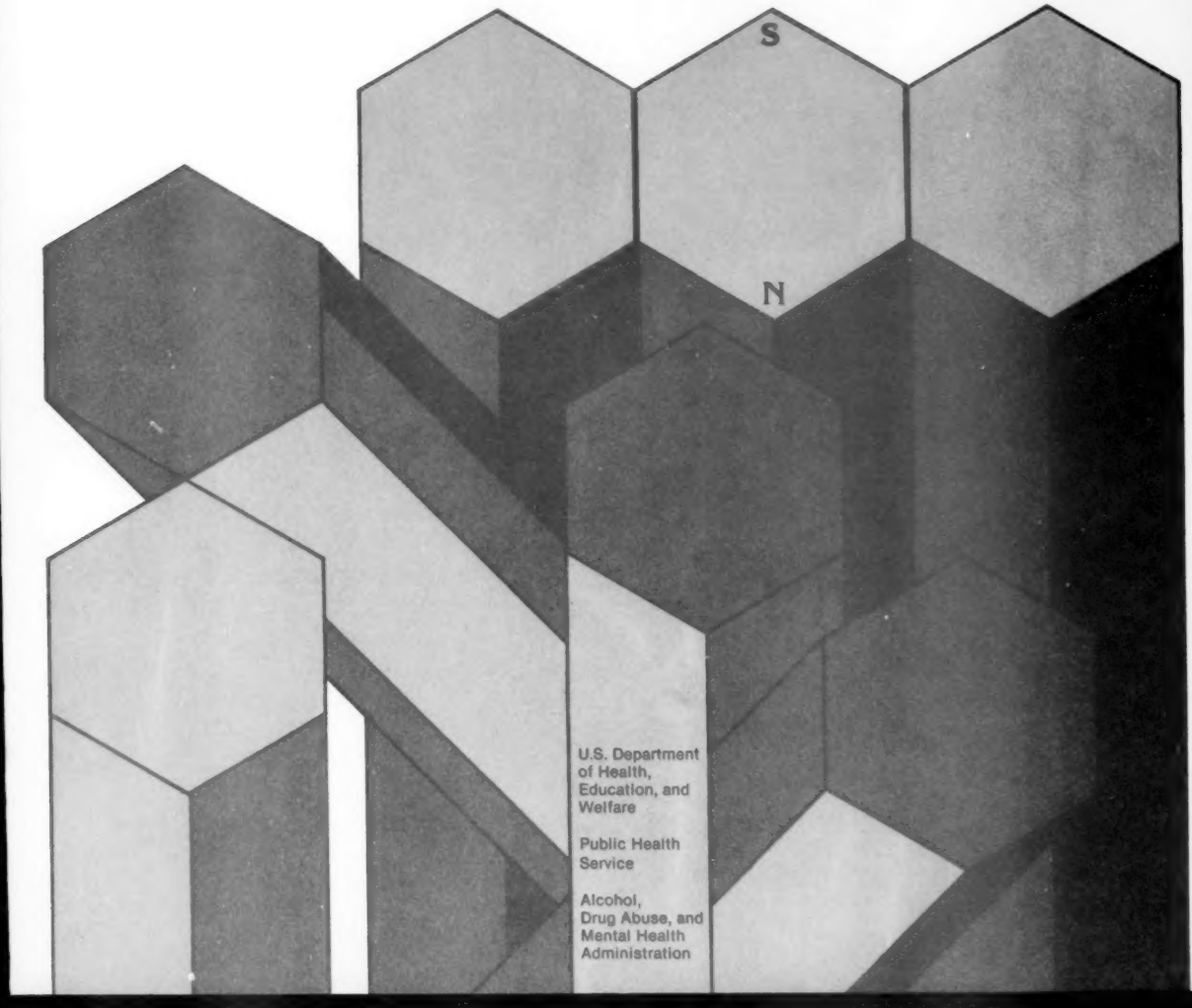
National Institute of Mental Health

The National Clearinghouse for Mental Health Information

VOL. 17 NO. 1 July 1979

Psychopharmacology Abstracts



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Volume 17, Number 1 July 1979

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Carrie Lee Rothgeb, *Editor*
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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service

Alcohol, Drug Abuse, and Mental Health Administration
National Institute of Mental Health
National Clearinghouse for Mental Health Information
5600 Fishers Lane
Rockville, Maryland 20857

DHHS Publication No. (ADM) 80-150
Printed 1980

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Subscription price per year in the United States, Canada, and Mexico: $14.00; other countries, $17.50. Single copy $3.50; other countries $4.40. Index issue $2.10. The Clearinghouse does not sell copies of *Psychopharmacology Abstracts*. Persons wishing to subscribe by the year or to purchase single copies should send their orders, accompanied by check or money order, directly to the Superintendent of Documents.

ABSTRACTS

PRECLINICAL PSYCOPHARMACOLOGY

01 CHEMICAL SYNTHESIS, ISOLATION AND CHARACTERIZATION

000001 Coutts, R. T.; Jones, G. R.; Townsend, R. E. Faculty of Pharmacy and Pharmaceutical Sciences, University of Alberta, Edmonton, T6G 2N8, Canada **Species differences in the in vitro metabolic reduction of the amphetamine metabolite, 1-phenyl-2-propanone.** Journal of Pharmacy and Pharmacology (London). 30(7):415-418, 1978.

Amphetamine, N-n-propylamphetamine (NPA), 1-phenyl-2-propanone, and 1-phenyl-2-propanol were incubated with fortified liver homogenates from rats, guinea-pigs, and rabbits, and the ketone and/or the alcohol formed was measured. Marked differences were observed in the ability of fortified 9000g liver homogenate supernatants from the three species to reduce 1-phenyl-2-propanone to the corresponding alcohol. This metabolic keto reduction was negligible in homogenates from the rat and extensive in the rabbit; guinea-pig liver homogenates had intermediate ability. Metabolic oxidation of 1-phenyl-2-propanol was negligible in all three species. The amount of deamination of amphetamine and of NPA was approximately equal, in vitro, in rats and guinea-pigs, but two to three times greater in liver homogenates from rabbits. Approximately three times more deaminated products were formed from the in vitro metabolism of NPA than from amphetamine metabolism by all three species. 17 references. (Author abstract modified)

000002 Davidson, A. G. Dept. of Pharmaceutical Chemistry, School of Pharmaceutical Sciences, University of Strathclyde, Glasgow G7 7XW, Scotland **The determination of sulphoxide in degraded phenothiazine formulations by difference spectrophotometry.** Journal of Pharmacy and Pharmacology (London). 30(7):410-414, 1978.

A method is described for the spectrophotometric essay of phenothiazine sulphoxides, which may be formed in phenothiazine formulations during storage under unfavorable conditions. The essay is based upon the measurement of difference absorbance of the sulphoxide solution in 0.2M hydrochloric acid relative to an equimolar solution reduced with zinc dust. A solvent extraction procedure avoided interference from coloring agents and colored photolytic breakdown products of the phenothiazines. The essay is specific in the presence of intact drug, sulphone, and conformulated drugs for the formulations examined and is sensitive to 0.5% of the total phenothiazine present as sulphoxide. Many aqueous formulations stored in partially filled containers have been shown to contain up to 31.5% of the total phenothiazine as sulphoxide. 4 references. (Author abstract modified)

000003 Jarboe, Charles H.; Bannon, Michael J.; Lipson, Steve F. Dept. of Pharmacology and Toxicology, School of Medicine, University of Louisville, Louisville, KY 40232 **Pharmacology of beta-(3,4-dimethoxyphenyl)ethyl amine: lack of peripheral and central antidopaminergic properties.** Journal of Pharmacy and Pharmacology (London). 30(7):450-451, 1978.

The pharmacology of dopamine dimethyl ether (DMPEA) was investigated, and it is shown that DMPEA has no antidopaminergic properties. In nontoxic doses, the peripheral action of DMPEA was that of an alpha-adrenergic agonist; centrally, DMPEA potentiated apomorphine-induced climbing behavior as indicated by haloperidol blockable climbing in mice. In view of the results, it is not possible to hold the view that DMPEA is a pharmacological antagonist at receptor sites selective for dopamine or dopaminergic agonists. 15 references.

000004 Kopin, Irwin J. Laboratory of Clinical Science, DCBR, NIMH, Bethesda, MD 20014 **Central nervous sytem actions of anti-hypertensive drugs. (Unpublished paper)** Bethesda, MD, NIMH, 1978. 23 p.

The discovery that several antidepressant drugs are effective in the pathogenesis of essential hypertension because of their actions on adrenergic mechanisms in the central nervous system that control blood pressure is discussed. Alpha-methyl-dopa, clonidine, fenfluramine, propranol, and their uses as hypertensive agents are examined. Stimulation of alpha receptors by clonidine or alpha-methyl norepinephrine (formed from alpha-methyl-dopa) activates baroreceptor reflexes that monitor blood pressure and initiate cardiovascular reflexes. This activation of the baroreceptor reflexes diminishes vasomotor tone and enhances vagal output so that blood pressure declines and heartrate slows. Fenfluramine appears to have a similar effect but its mechanism of action is unknown. It is concluded that antidepressant drugs, by an unknown mechanism, interfere with centrally acting antihypertensive drugs. Because of the frequency of depression in hypertensive patients, this is considered an important drug/drug interaction. 35 references.

000005 Liu, Sung-Tsuen; Hurwitz, Arthur. Pharmacy Research and Development, Ayerst Laboratories, Inc., Rouses Point, NY 12979 **Effect of enantiomeric purity on solubility determination of dexclamol hydrochloride.** Journal of Pharmaceutical Sciences. 67(5):636-638, 1978.

The interaction of the enantiomers of (4a,13b-trans)-(3(OH),13b(H)-trans)-3-isopropyl-2,3,4,4a,8,9,13b,14- octahydro-1H- benzo-(6,7)cycloheptal(1,2,3-de)pyrido(2,1-a)isoquinolin-3-ol hydrochloride and the effect of these interactions on solubility behavior were examined. The solubility of the racemic compound was 3.3mg/ml in pure water. Its resolved enantiomers showed about a fivefold increase in solubility. Dexclamol hydrochloride, the ()-I enantiomer, was bioactive as a neuroleptic and was soluble to the extent of 16.4mg/ml. However, raw material purity in relation to the amounts of the racemate present significantly influences solubility and optimum conditions for dissolution. The effect of trace amounts of the (-)-I enantiomer or the racemic form on the solubility of ()-I enantiomer raw materials was explained through phase solubility studies. Conditions required for preparation of clear solutions using raw materials of varying purity can be determined with derived expressions. The application and limitations of using an enantiomer as a tool to improve solubility are discussed. 12 references. (Author abstract)

000006 Markey, S. P.; Powers, K.; Dubinsky, D.; Kopin, I. J. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **General methods for the synthesis of methyl isotope labelled Preparation of catecholamine metabolites. 4-hydroxy-3-methoxy-2H3 (mandelic acid, phenylacetic acid, and phenylethyl glycol). (Unpublished paper)** Bethesda, MD, NIMH, 1978. 15 p.

Two general schemes for the synthesis of isotope labeled monomethyl catecholamine metabolites are described, and specific details are given for the preparation of: 2-methoxy-2H3-phenol, 4-hydroxy-3-methoxy-2H3-mandelic acid (vanillylmandelic acid), 4-hydroxy-3-methoxy-2H3-phenylacetic acid (homovanillic acid), 4-hydroxy-3-methoxy-2H3-phenylglycol, 3-hydroxy-4-methoxy-2H3-benzaldehyde (isovanillin), 4-benzyloxy-3-hydroxybenzaldehyde, 4-hydroxy-3-methoxy-2H3-benzaldehyde (vanillin), and 3-hydroxy-4-methoxy-2H3-mandelic acid (iso-vanillylmandelic acid). Catechol was converted to 2-methoxy-2H3-phenol with deuteromethyl iodide and reacted with sodium

glyoxylate to form 4-hydroxy-3-methoxy-2H3-mandelic acid. Hydrogenolysis of the methyl ester diacetate of 4-hydroxy-3-methoxy-2H3-mandelic acid with excess sodium borohydride in water yielded 4-hydroxy-3-methoxy-2H3-phenylacetic acid. Reduction of 4-hydroxy-3-methoxy-2H3-mandelic acid with diborane produced 4-hydroxy-3-methoxy-2H3-phenyglycol. An alternative route was to alkylate 3,4-dihydroxybenzaldehyde and produce 4-hydroxy-3-methoxy-2H3-mandelic acid or its 3-hydroxy-4-methoxy isomer via the nitrile mandelic acid synthesis. Suitability of these isotopic and isomeric variants as internal standards for quantitation by gas chromatography/mass spectrometry is discussed. 22 references. (Author abstract modified)

000007 Moereels, H.; Tollenaere, J. P. Department of Theoretical Medicinal Chemistry, Janssen Pharmaceutica Research Laboratories, B-2340 Beerse, Belgium **A comparison between the conformation of dexclamol and the tricyclic and butyrophenone type dopamine antagonists.** Life Sciences (Oxford). 23(5):459-463, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, a conformational study of dopamine antagonists is described. The rigid dopamine antagonist dexaclamol (3S, 4aS, 13bS), which is stereospecific both in vitro and in vivo, was used as a probe ligand to the dopamine receptor. Butaclamol was compared with various dopamine antagonists covering several structurally different classes such as butyrophenones and diphenylbutyl, chlorpromazine, thioxanthene, and clozapine derivatives. Using the dexaclamol model, the possible biologically relevant conformational space of structurally flexible dopamine antagonists was limited to a narrow domain. 14 references. (Author abstract modified)

000008 Repke, David B.; Bates, Dallas K.; Ferguson, Wilfred J. P.O. Box 899, Los Altos, CA 94022 **Synthesis of dextroamphetamine sulfate and methamphetamine hydrochloride from D-phenylalanine.** Journal of Pharmaceutical Sciences. 67(8):1167-1168, 1978.

The synthesis of dextroamphetamine sulfate and methamphetamine hydrochloride from D-phenylalanine is described. The reaction sequence proceeds through three intermediates, in which the absolute configuration of the asymmetric carbon atom is changed but the relative configuration remains the same. Either product can be obtained from a common intermediate by altering the reductive conditions employed for the removal of a carbamate protecting group. 24 references. (Author abstract)

000009 Underberg, W. J. M. Farmaceutisch Laboratorium, Rijksuniversiteit Utrecht, Catharijnesingel 60, Utrecht, Netherlands **Oxidative degradation of pharmaceutically important phenothiazines - III: kinetics and mechanisms of promethazine oxidation.** Journal of Pharmaceutical Sciences. 67(8):1133-1138, 1978.

The kinetics of the thermal degradation of promethazine in an acidic medium under various conditions were investigated. In an oxygen saturated medium, promethazine generally followed first order kinetics. Increasing the pH increased the degradation rate to a limiting value at pH 5. Addition of copper increased the degradation rate over the whole process, while iron caused an increase only for a short time. Ascorbic acid sometimes increased the degradation rate, while higher concentrations of hydroquinone also accelerated the degradation. Pyrosulfite did not have any influence. Under anaerobic conditions, promethazine degraded only in the presence of copper and iron ions. As a result of the studies on the qualitative and quantitative aspects of the oxidation process, a mechanism for the oxidative degradation of promethazine is suggested. Promethazine 5-oxide and a number of degradation products without intact side chains are formed via a semiquinone free radical. 20 references (Author abstract modified)

000010 Underberg, W. J. M. Framaceutisch Laboratorium, Rijksuniversiteit Utrecht, Catharijnesingel 60, Utrecht, Netherlands **Oxidative degradation of pharmaceutically important phenothiazines - I: isolation and identification of oxidation products of promethazine.** Journal of Pharmaceutical Sciences. 67(8):1128-1131, 1978.

The thermal degradation of promethazine in water in the presence of oxygen was studied. After degradation, the products were isolated by thin layer chromatography. Identification was carried out by comparison of the isolated compounds with reference compounds. Melting points, spectral data, and polarographic and chromatographic behavior were compared. The following products were identified: 10-methylphenothiazine, phenothiazine, 3H-phenothiazine-3-one, phenothiazine 5-oxide, promethazine 5-oxide, 7-hydroxy-3H-phenothiazine-3-one, acetaldehyde, formaldehyde, and dimethylamine. 37 references. (Author abstract)

02 DRUG DEVELOPMENT (PRECLINICAL SCREENING)

000011 Astoin, Jacques; Marivain, Alain; Riveron, Andre; Crucifix, Micheline; Lapotre, Martine; Torrens, Yvette. Centre de Recherche des Laboratoires Biocodex, 22, rue Jean Bouton, F-75012 Paris, France **/Central nervous system agents: new alpha-ethylenic alcohols./** Action de nouveaux alcools alpha-ethyleniques sur le systeme nerveux central. European Journal of Medicinal Chemistry (Paris). 13(1):41-47, 1978.

The sedative and anticonvulsive properties of a series of 1-alkoxyaryl 3-alkyl 1-alkene 3-o1 and the ketones from which they originate were studied in mice and rats. Five compounds were selected, and the psychopharmacological effects of these compounds were further examined. One of these compounds, 4.4-dimethyl 1-(3.4-methylene dioxy phenyl) 1-pentene 3-o1, was found to have important anticonvulsive and sedative properties. 26 references. (Journal abstract modified)

000012 Barchas, Jack D.; Berger, Phillip A.; Matthysse, Steven; Wyatt, Richard J. Stanford University School of Medicine, Stanford, CA **The biochemistry of affective disorders and schizophrenia.** In: Clark, W., Principles of psychopharmacology. 2nd ed. New York, Academic Press, 1978. 976 p. (p. 105-131).

The evidence for a relationship between altered or abnormal neurotransmitter activity and psychiatric disorders is summarized. Topics discussed are: the monoamine hypothesis of depression and mania; the pharmacological basis of the monoamine hypothesis; metabolic studies in patients with affective disorders; other biochemical hypothesis of disorders; the aminergic hypothesis of schizophrenia; the transmethylation hypothesis; enzymatic abnormalities in blood related to schizophrenia; the dopamine hypothesis of antipsychotic drug action; the theory of preclinical screening of antipsychotic drugs; a priori screening tests; biochemical screening tests; neurophysiological screening tests; and behavioral screening tests. 127 references.

000013 Bourn, W. M.; Keller, W. J.; Bonfiglio, J. F. School of Pharmacy, Northeast Louisiana University, Monroe, LA 71209 **Psychoactivity of normacromerine in animals.** Life Sciences. 23(11):1175-1184, 1978.

The psychoactive properties of normacromerine (NMC), a dimethoxylated phenethylamine obtained from the Dona Ana cactus, were compared with those of mescaline (MES), psilocin (PSI), amphetamine (AMP), and pentobarbital (PEN). Only the highest dose of NMC (10mg/kg) impaired the conditioned avoidance response in male Sprague-Dawley rats; MES, PSI,

and AMP enhanced the response. NMC, AMP, PSI, and MES each produced increases in locomotor activity. NMC produced activity patterns similar to those resulting from treatment with MES or PSI. NMC appears to be psychoactive and correlated more closely with MES and PSI than with the other two drugs used in this study. 16 references. (Author abstract modified)

000014 Dlabac, A. Research Institute for Pharmacy and Biochemistry, 130 60 Prague 3, Czechoslovakia **Basic pharmacology of injection forms of clorotepin (Clotepin SPOFA).** Activitas Nervosa Superior (Praha). 20(1):46-47, 1978.

In a paper read at the 19th Annual Psychopharmacologicl Meeting, held in Jesenik, Czechoslovakia during January 1977, the basic pharmacology of injection forms of clorotepin (Clotepin SPOFA) is described. Estimation of acute toxicity in mice of water and oil forms of clorotepin, the original neuroleptic drug from the perathiepin group, is described. Results in the rotating rod test in mice, kataleptogenic study in rats, and antiapomorphine methods in rats indicate a more rapid onset of action after the subcutaneous or intramuscular injection of aqueous forms of clorotepin than oil form.

000015 Gelenberg, Alan J.; Klerman, Gerald L. Massachusetts General Hospital, Harvard Medical School, Boston, MA 02115 **Preclinical pharmacology of antidepressants. Part 2: tricyclics.** In: Clark, W., Principles of psychopharmacology. 2nd ed. New York, Academic Press, 1978. 976 p. (p.317-323).

The antidepressant activity of tricyclics is examined. Topics discussed are: historical background of chemicals available for the treatment of depressed patients; the chemical structure activity considerations of the tricyclic derivatives; absorption, distribution, metabolism, and excretion; behavioral effects; peripheral autonomic effects; effects on central neurotransmitters and proposed mechanisms of action and interactions with other drugs. 5 references.

000016 Geneste, P.; Kamenka, J.-M.; Vidal, Y.; Fauquet, J.-P.; Morel, E.; Muller, P.; Warolin, C. Laboratoire de Chemie Organique Physique Appliquee, Ecole Nationale Superieure de Chimie de Montpellier, F-34075 Montpellier Cedex, France / **Studies on imidazo-(4,5-1-jk)-1,4-benzodiazepine and imidazo-(1,5,4-ef)-1,5-benzodiazepine derivatives./** Recherches en serie de l'imidazo- (4,5,1-jk)-benzodiazepine-1,4 et de l'imidazo- (1,5,4-ef)-benzodiazepine-1,5. European Journal of Medicinal Chemistry (Paris). 13(1):53-59, 1978.

Derivatives of imidazo-(4,5,1-jk)benzodiazepine-1,4 and imidazo-(1,5,4-ef)-benzodiazepine-1,5, obtained from suitable imidazo-(4,5,1-ij)-quinolones-6 through a Schmidt reaction, were studied. Diazepam- and nitrazepam-like structures were searched by substitution. Pharmacological results on animals show no tranquilizing action for any of the compounds tested. 31 references. (Journal abstract modified)

000017 Kornet, Milton J. Division of Medicinal Chemistry, College of Pharmacy, University of Kentucky, Lexington, KY 40506 **Synthesis of 1-methyl-2-phenylcarbamoylpyrazolidines as potential anticonvulsant agents.** Journal of Pharmaceutical Sciences. 67(10):1471-1473, 1978.

A series of 1-methyl-2-phenylcarbamoylpyrazolidines were synthesized and evaluated for anticonvulsant activity in male mice. Lithium aluminum hydride reduction of 1,4-dimethyl-3-pyrazolidone yielded 1,4-dimethylpyrazolidine. The latter compound and 1-methylpyrazolidine reacted with aryl isocyanates to produce 1-methyl-2-phenylcarbamoylpyrazolidines. Several of these adducts displayed significant anticonvulsant activity in the maximal electroshock seizure and pentylenetetrazol seizure threshold tests. 14 references. (Author abstract modified)

000018 Lemke, Thomas L.; Cramer, Michael B.; Shanmugam, K. Department of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, University of Houston, Houston, TX 77004 **Heterocyclic tricycles as potential CNS agents. I: 4-aminoalkylindeno(1,2-c)pyrazoles.** Journal of Pharmaceutical Sciences. 67(10):1377-1381, 1978.

In an evaluation of novel heterocyclic tricyclic nuclei as potential CNS agents, series of 4-(3-dimethylaminopropyl)-4-hydroxyindeno(1,2-c)pyrazoles and 4-(1-methyl-4-piperidyl)-4-hydroxyindeno(1,2-c)pyrazoles were synthesized and identified. The effects of these compounds on spontaneous and forced motor activity in male Swiss-Webster mice were examined. Results indicate that 2-ethyl-3-methyl-4-(1-methyl-4-piperidyl)-4-hydroxyindeno(1,2-c) pyrazole possesses significant biological activity and may be a useful psychotropic agent. 9 references. (Author abstract modified)

000019 Lowe, Michael C.; Horita, Akira. School of Medicine, University of Washington, Seattle, WA 98195 **Preclinical pharmacology of antidepressants. Part 1: Monoamine oxidase inhibitors.** In: Clark, W., Principles of psychopharmacology. 2nd ed. New York, Academic Press, 1978. 976 p. (p.312-317).

The mechanism of the antidepressant action of monoamine oxidase (MAO) inhibitors is examined. Topics discussed are: classification of MAO; mechanism of action; localization; multiple forms; postulated functions; implications of MAO inhibitors; classes of MAO inhibitors; effects unrelated to MAO inhibitors; and interactions with other drugs. 9 references.

000020 Messiha, F. S. Department of Pathology, Texas Tech University, School of Medicine, Lubbock, TX 79409 **Anti-depressant action of caesium chloride and its modification of chlorpromazine toxicity in mice.** British Journal of Pharmacology (London). 64(1):9-12, 1978.

The effect of cesium chloride on reserpine-induced behavioral depression, amphetamine-induced hypermotility, and chlorpromazine toxicity was investigated in adult male mice. Intraperitoneal administration of 1.0mEq/kg cesium chloride once daily for 54 days prior to administration of a single dose of reserpine (2.0mg/kg) or d-amphetamine (1.0mg/kg) resulted in antagonism of reserpine behavioral depression and potentiation of amphetamine hypermotility. Chronic administration of cesium chloride in conjunctin with incrementing doses of chlorpromazine (up to 50mg/kg/day) counteracted chlorpromazine mortality in mice. Results suggest that cesium has antidepressant properties and may be useful in the management of adverse reactions induced by chlorpromazine. 14 references. (Author abstract modified)

000021 Nichols, David E.; Pfister, William R.; Yim, George K. W. Department of Medicinal Chemistry and Pharmacognosy, School of Pharmacy and Pharmacal Sciences, Purdue University, West Lafayette, IN 47907 **LSD and phenethylamine hallucinogens: new structural analogy and implications for receptor geometry.** Life Sciences. 22(24):2165-2170, 1978.

The hallucinogen analog trans-2(2,5-dimethoxy-4-methylphenyl)-cyclopropylamine (DMCPA) was resolved into its two optical isomers. Examination of selected behavioral profiles in Swiss-Webster mice and in cats clearly showed that the levorotatory isomer of DMCPA possessed stereoselective activity, compared with the dextro isomer. Results paralleled those obtained using the isomers of the known hallucinogen, 1-(2,5-dimethoxy-4-methylphenyl)-2-aminopropane hydrochloride, in the same animal models. Comparison of the optical rotatory dispersion curves for the N-(5-bromosalicylidene) derivatives of DMCPA and trans-2-phenylcyclopropylamine (tranylcypromine) of known absolute configuration established the configu-

ration of DMCPA to be (-)-1R,2S. This stereoselective activity and proof of absolute configuration lend strong support to a new model of the hallucinogen receptor. The proposed model suggests possible structural similarities between d-lysergic acid diethylamide and phenethylamine hallucinogens. 22 references. (Author abstract)

03 MECHANISM OF ACTION: PHYSIOLOGICAL, BIOCHEMICAL AND PHARMACOLOGICAL

000022 Abdel-Halim, M. S.; Sjoquist, B.; Anggard, E. Department of Pharmacology, Karolinska Institutet, S-104 01 Stockholm, Sweden **Inhibition of prostaglandin synthesis in rat brain.** Acta Pharmacologica et Toxicologica (Kobenhavn). 43(4):266-272, 1978.

The potency of indomethacin, diclofenac, naproxen, aspirin, and paracetamol as inhibitors of prostaglandin (PG) synthesis in brain homogenates was investigated. Male Sprague-Dawley rats were injected with one of the five drugs 30 minutes prior to decapitation. The endogenous formation of PGF2alpha and PGE2 in brain homogenates was measured by mass fragmentography using deuterium labeled PGF2alpha and PGE2 as internal standards. Diclofenac, indomethacin, and naproxen inhibited the synthesis of PGF2alpha in a dose dependent manner. The median effective doses were 0.4mg/kg for diclofenac, 1mg/kg for indomethacin, and 2mg/kg for naproxen. In equieffective doses, indomethacin had the longest duration. The time taken for the inhibition to decline to half its maximal value was 32 hours for indomethacin and about 15 hours for diclofenac and naproxen. Aspirin and parcetamol in doses up to 100mg/kg failed to significantly reduce PG synthesis in the rat brain homogenates. 14 references. (Author abstract modified)

000023 Aghajanian, George K. Departments of Psychiatry and Pharmacology, Yale University School of Medicine, New Haven, CT 06508 **Tolerance of locus coeruleus neurones to morphine and suppression of withdrawal response by clonidine.** Nature (London). 276(5684):186-188, 1978.

The development of tolerance of locus coeruleus (LC) cells to the depressant effects of morphine, naloxone induced withdrawal activations of LC neuronal firing in morphine dependent animals, and the ability of clonidine to suppress LC neuronal withdrawal through a nonopiate receptor were examined in the rat. Results indicate that tolerance develops to the powerful inhibitory effect of morphine on the firing of LC neurones. In tolerant animals, naloxone induced a withdrawal response characterized by a greater than 100% activation of firing. The marked sensitivity and high selectivity of LC neurones for opiates and opiate antagonists in this region of the brain is consistent with previous findings. Finally, results indicate that morphine and clonidine act at independent LC cell receptors, as naloxone blocks morphine but not clonidine and the alpha antagonist piperoxane blocks clonidine but not morphine. 23 references.

000024 Ahn, Ho Sam; Makman, Maynard H. Departments of Biochemistry, Albert Einstein College of Medicine, and Molecular Pharmacology Bronx, NY 10461 **Serotonin sensitive adenylate cyclase activity in monkey anterior limbic cortex: antagonism by molindone and other antipsychotic drugs.** Life Sciences (Oxford). 23(5):507-511, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, the effects of antipsychotic drugs and of 5-hydroxytryptamine (5-HT) antagonists on 5-HT sensitive adenylate cyclase in anterior limbic cortex homogenates from Cebus appella and Macaca mulata monkeys are reported. Stimulation of adenylate cyclase by 5-HT and dopamine (DA) showed different time courses. At maximally effective concentrations, the effects of 5-HT and DA were additive. Classical 5-HT antagonists (methiopen, cyproheptadine, and methysergide) blocked the 5-HT sensitive adenylate cyclase activation. These 5-HT antagonists also effectively inhibited DA sensitive adenylate cyclase. Most antipsychotic drugs tested antagonized 5-HT stimulated enzyme activity, but showed greater efficacies in blocking DA stimulated enzyme activity. However, molindone failed to antagonize DA sensitive adenylate cyclase but effectively blocked 5-HT sensitive cyclase. Pipamperone was inactive in both cyclase systems. Haloperidol was a more selective antagonist of the DA sensitive adenylate cyclase than were the other antipsychotic drugs tested. 16 references. (Author abstract modified)

000025 Airaksinen, M. M.; Huang, J.-T.; Ho, B. T.; Taylor, D.; Walker, K. Department of Pharmacology, University of Kuopio, P. O. B. 138, SF-70101 Kuopio 10, Finland **The uptake of 6-methoxy-1,2,3,4-tetrahydro-beta-carboline and its effect on 5-hydroxytryptamine uptake and release in blood platelets.** Acta Pharmacologica et Toxicologica (Kobenhavn). 43(5):375-380, 1978.

The uptake of 6-methoxy-1,2,3,4-tetrahydro-beta-carboline (6-MeOTHBC, 5-methoxytryptoline) by rabbit blood platelets was studied A high rate active uptake (Michaelis-Menten constant value 6.6mcM) that was inhibited by 5-hydroxytryptamine (5-HT) and cinnanserine and a slow rate uptake that was not inhibitied by 5-HT were observed. The intracellular distribution of tritiated 6-MeOTHBC in platelets clearly differed from that for 14C-5-HT. The high rate active (but not the slow passive) uptake of 14C-5-HT was competitively inhibited by 6-MeOTHBC, which was more active than 5-HT itself. The spontaneous release of the newly taken up 14C-5-HT from platelets was increased only with high concentrations of 6-MeOTHBC. 18 references. (Author abstract modified)

000026 Akaike, A.; Shibata, T.; Satoh, M.; Takagi, H. Department of Pharmacology, Faculty of Pharmaceutical Sciences, Kyoto University, Sakyo-ku, Kyoto 606, Japan **Analgesia induced by microinjection of morphine into, and electrical stimulation of, the nucleus reticularis paragigantocellularis of rat medulla oblongata.** Neuropharmacology (Oxford). 17(9):775-778, 1978.

A dose related analgesia was produced in male Sprague-Dawley rats by microinjections of morphine (0.15-15ng) into the nucleus reticularis paragigantocellularis (NRPG) of the medulla oblongata. The analgesia was antagonized by naloxone pretreatment. Focal electrical stimulation of the NRPG also elicited analgesia. Results suggest that the NRPG is highly sensitive to morphine and to electrical stimulation. 10 references. (Author abstract modified)

000027 Algeri, S.; Brunello, N.; Calderini, G.; Consolazione, A. Istituto di Ricerche Farmacologiche "Mario Negri," Via Eritrea 62, I-20157 Milan, Italy **Effect of enkephalins on catecholamine metabolism in rat CNS.** Advances in Biochemical Psychopharmacology. 18:199-210, 1978.

The effects of the synthetic methionine-enkephalin analogue, D-A1a-methionine enkephalin amide (DALA), on catecholamine metabolism were investigated in rat brain. Studies employing various methodological approaches indicated that DALA stimulates dopamine (DA) turnover in rat brain and that this effect is mediated by an increase in the activity of tyrosine hydroxylase. The effect of DALA on DA metabolism was completely antagonized by naloxone, indicating that DALA interacts with opiate receptors. Since DALA had no effect on DA sensitive adenylate cyclase, these receptors must be distinct from the postsynaptic DA receptors. DALA did not increase the formation of the catabolite 3-methoxytyramine, indicating

that the increase in DA turnover is not correlated with increased dopaminergic neural activity. These biochemical findings are similar to those obtained after treatment with gamma-aminobutyric acid (GABA) agonists, suggesting that enkephalins may interact with the dopaminergic system through GABA containing neurons. 34 references.

000028 Andersen, R. K.; Lund, J. P.; Puil, E. Dept. of Pharmacology, Faculty of Medicine, University of British Columbia, B.C., Canada V6T 1W5 **Enkephalin and substance P effects related to trigeminal pain.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(2):216-222, 1978.

The possibility that enkephalin might be involved in the same system as the peptide substance-P, an important candidate for the transmission of excitation in sensory systems subserving pain, but, in a manner opposite to that of substance-P, was examined by determining the chemical responsiveness of neurons activated by noxious and nonnoxious stimuli in the trigeminal area. Iontophoretic applications of enkephalin reduced the spontaneous firing frequency of nociceptive neurons in the trigeminal nucleus caudalis of decerebrated cats. The response evoked by noxious stimulation (tooth pulp) was gradually inhibited during the first minute of application of the opioid, and generally remained depressed for 5 minutes after the current was turned off. These effects of enkephalin were blocked by intravenously or iontophoretically administered naloxone. Nonnociceptive neurons or nociceptive neurons responding to nonnoxious inputs were less frequently inhibited by enkephalin. When tested on nonnociceptive cells, similar applications of substance-P usually had little effect. Nociceptive neurons, however, were strongly excited by substance-P. This action was not constant and was interrupted by periods of inactivation. Both types of peptide action were similar in temporal aspects. Results suggest a functional interrelationship between enkephalin and substance-P in a trigeminal system mediating nociception. 34 references. (Author abstract modified)

000029 Arbilla, Sonia; Langer, S. Z. Synthelabo, Department of Biology, 58 rue de la Glaciere, F-75013 Paris, France **Effects of gamma-aminobutyric acid on the potassium and tyramine-induced release of (3H)-noradrenaline from rat occipital cortex slices.** British Journal of Pharmacology (London). 63(2):389-390, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society, in Guildford, England, the effects of gamma-aminobutyric acid (GABA) on the potassium (K) and tyramine-induced release of tritiated noradrenaline (NA) from rat occipital cortex slices were reported. GABA enhanced the K induced release of (3H)NA from occipital cortex slices; this enhancement was not antagonized by bicuculline or by picrotoxine under conditions in which the blocking agents did not themselves affect the K-induced release of (3H)NA. In contrast, the release of (3H)NA induced by tyramine was not enhanced by GABA. GABA also failed to affect NA release elicited by nerve stimulation in the isolated nerve/muscle preparation of the cat nictitating membrane. 11 references. (Author abstract modified)

000030 Auguy-Valette, A.; Cros, J.; Gouarderes, Ch.; Gout, R.; Pontonnier, G. Groupe de recherche et d'etude de physiologie obstetricale et de pharmacologie perinatale (INSERM), Hopital La Grave, Toulouse, France **Morphine analgesia and cerebral opiate receptors: a developmental study.** British Journal of Pharmacology (London). 63(2):303-308, 1978.

The development of the analgesic response to morphine and the ontogeny of central opiate receptors were analyzed in 5 120-day-old Wistar rats. The analgesic effect of morphine increased until day 15, then decreased to reach a plateau at about day 30. In contrast, the analgesic effect of phenoperidine increased until day 15, remained constant between days 15-30, and then decreased slowly. The ratio of the amounts of morphine in blood to those in brain increased about threefold between days 15-30. Opiate receptors were detected in the brains of newborn rats, and stereospecific binding of (3H)naloxone at 10 and 50nM indicated the presence of low and high affinity binding sites. The number of (3H)naloxone binding sites increased rapidly during the second and third week after birth, and their affinity for several opiates remained constant throughout development. Results indicate that the analgesic activity of opiates varies with age. Until day 15, the analgesic effect of opiates increases in parallel with the number of opiate brain receptors. The formation of the blood/brain barrier then introduces an additional step in the regulation of opiate activity. 16 references. (Author abstract modified)

000031 Awazi, N.; Guldberg, H. C. Dept. of Pharmacology and Clinical Pharmacology with Toxicology, University of Trondheim, Regional Hospital, N-7000 Trondheim, Norway **On the interaction of 5-hydroxytryptophan and 5-hydroxytryptamine with dopamine metabolism in the rat striatum.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 303(1):63-72, 1978.

The effects of 5-hydroxytryptophan (5-HTP) and some indole derivatives on dopamine metabolism in the corpus striatum of rats were studied. Striatal dopamine as well as its metabolic end products, 3,4-dihydroxyphenylacetic acid (DOPAC) and homovanillic acid (HVA) were measured following 5-HTP or other indoles administered systemically or intraventricularly under different experimental conditions. The mode of action of 5-HTP on striatal dopamine was considered to be that of displacement of dopamine from storage sites and metabolism following intraneuronal release of the amine. This action leads in turn to a compensatory dopaminergic mechanism operating by a positive feedback on the rate-limiting step in dopamine synthesis and increasing the rate of formation of the amine. The mechanism of action of exogenous 5-hydroxytryptamine (5-HT) on striatal dopamine was different from that of 5-HTP and it is proposed that 5-HT acts primarily by inhibiting the synthesis of dopamine. It is postulated that the essential difference in the mode of action of 5-HTP and 5-HT on dopamine might be that 5-HTP is readily taken up by dopaminergic neurones and decarboxylated to 5-HT, which in turn displaces dopamine from the stores. It is concluded that the supposed effects of 5-HTP on 5-HT neurones may be mediated in part through the dopaminergic system. 29 references. (Author abstract modified)

000032 Baertschi, A. J.; Dreifuss, J. J. Dept. of Physiology, University of Geneva, CH-1211 Geneve 4, Switzerland **Antidromic compound potentials of the pituitary tract: interactions with systemic bradykinin.** Brain Research (Amsterdam). 149(2):530-534, 1978.

In an attempt to identify the site of action of neurohypophyseal activation by systemic bradykinin, bradykinin was injected via intravenous, intracarotid, or intravertebral routes, in 12 lactating rats, and antidromic compound potentials of the pituitary tract were measured. By comparison to the other routes, the retrocarotid administration of bradykinin produced the largest decrease of the compound potential, and this occurred with the shortest latency. The large decrease of the antidromic compound potential of the pituitary trace upon systemic administration of bradykinin suggests that the antidiuretic effect of bradykinin is consecutive to a central action of this peptide. Results suggest that bradykinin acts chiefly on a rhombencephalic site. 19 references.

000033 Bajgar, J.; Patocka, J.; Herink, J.; Fusek, J.; Hrdina, V. Purkyne Medical Research Institute, Hradec Kralove, Czechoslovakia **Benactyzine, atropine and chlorpromazine on blood-brain barrier permeability in rats.** Activitas Nervosa Superior (Praha). 20(1):56-57, 1978.

In a paper read at the 19th Annual Psychopharmacological Meeting, held in Jesenik, Czechoslovakia during January 1977, the effects of benactyzine, atropine, and chlorpromazine on blood-brain barrier (BBB) permeability in rats is described. Permeability of the BBB to 3-diethylaminophenyl-N-methyl-carbamate methiodide (DMC) following pretreatment with benactyzine, atropine, and chlorpromazine was measured as brain acetylcholinesterase (AChE) inhibition in 48 female Wistar rats. Both benactyzine and chlorpromazine pretreatment increased the permeablity of the BBB to DMC. 6 references.

000034 Baraban, Jay M.; Wang, Rex Y.; Aghajanian, George K. Department of Psychiatry, Yale University School of Medicine, New Haven, CT **Reserpine suppression of dorsal raphe neuronal firing: mediation by adrenergic system.** European Journal of Pharmacology (Amsterdam). 52(1):27-36, 1978.

The role of serotonergic and adrenergic systems in mediating reserpine induced suppression of 5-hydroxytryptamine (5-HT) cell firing in the dorsal raphe nucleus was investigated in male Sprague-Dawley rats. Intraventricular injections of 6-hydroxydopamine destroyed norepinephrine (NE) terminals in the raphe region and prevented reserpine's effect on 5-HT cell activity. Both L-amphetamine, which releases endogenous NE, and high doses of clonidine, a postsynaptic alpha-adrenergic agonist, reversed the reserpine induced depression of firing. Pretreatment with parachlorophenylalanine, which inhibits 5-HT synthesis, did not block the depressant effect of reserpine or the ability of amphetamine to restore activity. Local iontophoresis of small amounts of NE dramatically reversed the depressant effects of reserpine but not those of systemically administered lysergic acid diethylamide. Results suggest that reserpine suppresses 5-HT cell firing by interfering with tonic adrenergic transmission. Since the dorsal raphe receives adrenergic innervation, catecholamine terminals there could be responsible for providing the adrenergic tone upon which 5-HT cell firing depends. The possible involvement of local gamma-aminobutyric acid containing interneurons in mediating an indirect NE disinhibition of 5-HT cell activity is discussed. 62 references. (Author abstract modified)

000035 Bashore, Theodore R.; Rebec, George V.; Groves, Philip M. Department of Psychology, Union College, Schenectady, NY 12308 **Alterations of spontaneous neuronal activity in the caudate-putamen, nucleus accumbens and amygdaloid complex of rats produced by d-amphetamine.** Pharmacology Biochemistry and Behavior. 8(4):467-474, 1978.

Amphetamine-induced changes in neuronal activity in brain areas that receive dopaminergic innervation from the nigroneostriatal or mesolimbic pathways were studied in rats. Changes in spontaneous neuronal activity in the caudate-putamen, accumbens nucleus and amygdaloid complex of immobilized, locally anesthetized rats were recorded following intraperitoneal injection of 2.5mg/kg d-amphetamine sulfate. In each site, d-amphetamine typically produced a prolonged depression of firing rate which, in most cases, occurred after an initial, brief potentiation of activity. However, the onset of the amphetamine-induced depression occurred significantly later in the amygdala. Subsequent i.p. administration of either 5.0mg/kg chlorpromazine or 2.0mg/kg haloperidol reversed, to varying degrees, the amphetamine induced depression of neuronal activity in each area. These results are discussed in terms of the known biochemical effects of amphetamine on catecholaminergic transmission and the alleged role of the nigroneostriatal and mesolimbic dopamine systems in the amphetamine behavioral response. 40 references. (Author abstract)

000036 Belcher, G.; Ryall, R. W.; Schaffner, R. Department of Pharmacology, University of Cambridge, Hills Road, Cambridge, CB2 2QD, England **The differential effects of 5-hydroxytryptamine, noradrenaline and raphe stimulation on nociceptive and non-nociceptive dorsal horn interneurones in the cart.** Brain Research (Amsterdam). 151(2):307-321, 1978.

The effects of 5-hydroxytryptamine (5-HT), noradrenaline (NA) and stimulation of the inferior central nucleus of the raphe (RN) on nociceptive and nonnociceptive spinal neurons in anesthetized cats were examined. 5-HT reduced excitation evoked by noxious stimulation, but increased spontaneous firing and firing evoked by DL-homocysteic acid (DLH) on both nociceptive and nonnociceptive cells. NA reduced spontaneous activity, DLH evoked excitation and excitation evoked by a noxious stimulus on nociceptive neurons, but had little action on nonnociceptive units. RN inhibited spontaneous, stimulus evoked and DLH evoked firing of nociceptive cells and caused briefer inhibitions of nonnociceptive cells. Excitatory effects were also observed. Strychnine antagonized short duration inhibitions from RN of nonnociceptive cells responding to hair movement, but failed to antagonize any of the other effects of RN. No antagonism of the inhibitory effect of RN was observed with phenoxybenzamine, phentolamine, sotalol, bicuculline, or methysergide. Methysergide antagonized some excitatory effects of 5-HT and RN, but also produced nonspecific actions on some cells. It is concluded that, although glycine may mediate some of the brief duration inhibitions evoked by RN, the longer duration inhibitions are unlikely to have been mediated by either glycine or GABA. 5-HT may be a mediator of raphe/spinal actions, but may have presynaptic inhibitory actions coupled with postsynaptic excitatory effects. NA could mediate some descending inhibition of nociceptive neurones. 42 references (Author abstract)

000037 Beld, A. J.; Kuijer, B.; Rodrigues de Miranda, J. F.; Wouterse, A. C. Pharmacological Institute, University of Nijmegen, Nijmegen, The Netherlands **Ligand binding to dopamine-receptors: analysis & interpretation.** Life Sciences (Oxford). 23(5):489-493, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, concentration dependent inhibition of 3H-spiperone binding to calf caudate nucleus homogenates by ()-butaclamol, haloperidol, ergometrine, apomorphine, and dopamine is described. Experimental binding curves obtained with these agents were analyzed in terms of a one and a two site receptor model, using computerized curve fitting procedures. Results favor a two site dopamine receptor model. The presence of two independent noninterconverting receptor sites for dopamine in calf caudate nucleus is consistent with binding data from other laboratories and from in vivo experiments. 8 references. (Author abstract modified)

000038 Belknap, J. K.; Berg, J. H.; Ondrusek, G.; Waddingham, S. Department of Pharmacology, University of North Dakota School of Medicine, Grand Forks, ND 58202 **Barbiturate withdrawal and magnesium deficiency in mice.** Psychopharmacology (Berlin). 59(3):299-303, 1978.

Whole brain and serum magnesium concentrations were significantly lower in C57BL/6J male mice rendered physically dependent on phenobarbital than in control mice. The symptoms of phenobarbital withdrawal were remarkably similar to those seen in magnesium deficient mice exposed to a low magnesium diet without drug exposure. Results suggest that brain magne-

sium deficits produced by chronic phenobarbital withdrawal could contribute to the phenobarbital withdrawal syndrome. Administration of magnesium sulphate during withdrawal significantly reduced the incidence of tonic/clonic and lethal tonic seizures. 24 references. (Author abstract modified)

000039 Ben-Ari, Y.; Lagowska, Y.; Le Gal La Salle, G.; Tremblay, E.; Ottersen, O. P.; Naquet, R. Laboratoire de Physiologie nerveuse, Departement de Neurophysiologie appliquee, CNRS 91190, Gif-sur-Yvette, France **Diazepam pretreatment reduces distant hippocampal damage induced by intra-amygdaloid injections of kainic acid.** European Journal of Pharmacology (Amsterdam). 52(3/4):419-420, 1978.

Intraamygdaloid injection of kainic acid (KA) in male Wistar rats produced severe, long-lasting seizures, which were blocked by intraperitoneal administration of diazepam. Pretreatment with diazepam also reduced the distant hippocampal damage produced by KA, without affecting the focal amygdaloid degeneration. Results suggest that KA induces secondary epileptogenic damage. 5 references.

000040 Bergmann, Felix; Altstetter, Rayah; Weissman, B. A. Department of Pharmacology, Hebrew University-Hadassah Medical School, Jerusalem, Israel **In vivo interaction of morphine and endogenous opiate-like peptides.** Life Sciences. 23(26):2601-2608, 1978

The concentration of peptides reacting with antibody to leu-enkephalin in the cerebrospinal fluid (CSF) of male Sabra rats was determined by radioimmunoassay. Intravenous injection of morphine caused a biphasic response, consisting of an immediate and a delayed rise in the level of immunoreactive peptides in the CSF. After intravenous naloxone, only the late peak was observed. Combined administration of morphine and naloxone delayed the appearance of the first peak; the second peak did not show within 2-3 hours. Results suggest that enkephalins and related peptides are released from two sites, synaptic clefts and intracellular pools. 16 references. (Author abstract)

000041 Berntman, Leif; Carlsson, Christer; Siesjo, Bo K. MRC Cerebral Metabolism Group, E-Blocket, University Hospital and Department of Anaesthesiology, University of Lund, Lund, Sweden **Influence of propranolol on cerebral metabolism and blood flow in the rat brain.** 151(1):220-224, 1978. Brain Research (Amsterdam).

Cerebral metabolic and circulatory effects of i.v. propranolol in doses that are known to prevent or markedly reduce changes in cerebral carbohydrate metabolites induced by metamphetamine or intraventricularly administered beta-adrenergic agonists were examined. The experiments were performed on lightly anaesthetized male Wistar rats with control of temperature, blood pressure, blood gases and pH. The influence of propranolol on metabolites in cerebral cortex, cerebrospinal fluid, and blood were measured and behavior changes noted. Little support is given to the view that propranolol has a clear influence on glycolysis. Results confirm previous studies in showing that propranolol in doses of 1.4to 5mg/kg does not change wakefulness or spontaneous motility. It is concluded that when propranolol is given in doses that do not influence consciousness, it has no effect on cerebral metabolic rate. 17 references.

000042 Bhattacharya, Salil K.; Keshary, Prakash R.; Sanyal, Ajit K. Department of Pharmacology, Institute of Medical Sciences, Banaras Hindu University, Varanasi-221005, India **Immobilisation stress-induced antinociception in rats: possible role of serotonin and prostaglandins.** European Journal of Pharmacology (Amsterdam). 50(1):83-85, 1978.

Immobilization of Wistar rats for 1, 2, or 4 hours induced duration related antinociception. Antinociception induced by 4 hour immobilization was significantly inhibited after pretreatment with drugs known to inhibit synthesis of serotonin, induce degeneration of serotonergic neurons, or inhibit prostaglandin synthesis. Results indicate that immobilization stress induces autoanalgesia, which may be dependent on the availability of endogenous serotonin and prostaglandins in rat brain. 10 references. (Author abstract modified)

000043 Biggio, G.; Corda, M. G.; Casu, M.; Gessa, G. L. Institute of Pharmacology, University of Cagliari, Cagliari, Italy **Striato-cerebellar pathway controlling cyclic GMP content in the cerebellum: role of dopamine, GABA and enkephalins.** Advances in Biochemical Psychopharmacology. 18:227-244, 1978.

The role of dopamine (DA), gamma-aminobutyric acid (GABA), and enkephalins in modulating the striatocerebellar pathway controlling cyclic guanosine monophosphate (GMP) content in the cerebellum was investigated in rats. Results indicate that the striatocerebellar pathway conveys stimulatory input to the Purkinje cells and that drugs which modify cyclic GMP content may act by modifying nerve transmission along this pathway. DA, GABA, acetylcholine, and enkephalins are possible neurotransmitters at synapses within the striatal complex. GABA appeared to be responsible for the inhibition of pallidal neurons sending excitatory inputs to the climbing and mossy fibers, but the identity of the stimulatory transmitter to pallidal neurons could not be established. DA appeared to contribute to the control of cyclic GMP content by inhibiting cholinergic excitation acting on inhibitory GABA containing neurons, which in turn inhibit the excitatory pallidal outflow. The methionine-enkephalin analogue, D-A1a2-met-enkephalinamide (DALA), did not inhibit dopaminergic transmission by acting on a DA receptor or by inhibiting DA release from dopaminergic terminals; DALA also failed to inhibit DA sensitive adenylate cyclase. Preliminary evidence indicates that DALA decreases cerebellar cyclic GMP by acting on an opiate receptor located distal to the postsynaptic DA receptor in the caudate nucleus. 26 references.

000044 Billings, Ruth E.; Murphy, Patrick J.; McMahon, Robert E.; Ashmore, James. Toxicology Center, Department of Pharmacology, University of Iowa, Iowa City, IA 52242 **Aromatic hydroxylation of amphetamine with rat liver microsomes, perfused liver, and isolated hepatocytes.** Biochemical Pharmacology (Oxford). 27(21):2525-2529, 1978.

The hydroxylation of amphetamine to p-hydroxyamphetamine was investigated in male Sprague-Dawley rats. Perfused rat livers hydroxylated about 85% of the administered 20micromole dose of amphetamine within 1 hour; 94% of the p-hydroxyamphetamine was further metabolized by conjugation. Isolated hepatocytes were able to hydroxylate amphetamine and conjugate hydroxyamphetamine at rates comparable to those of the perfused liver. The rate of hydroxylation with microsomes was about 50% of that attained with isolated hepatocytes. With hepatocytes, the hydroxylation was inhibited by typical inhibitors of microsomal oxygenases, such as 2,6-dichlorophenylphenoxyethylamine and SKF-525A, and by iprindole. However, the rate could not be increased by treatments that induced cytochrome P-450 and increased other monooxygenase reactions. Results suggest that amphetamine is hydroxylated by a microsomal cytochrome P-450 dependent enzyme system, but that amphetamine is not a typical substrate. 21 references. (Author abstract modified)

000045 Bioulac, Bernard; Fumoux, Francis; Ferron, Andre; Vincent, Jean Didier. Laboratoire de Neurophysiologie, Universite de Bordeaux II, 146, rue Leo Saignat, 33076 Bordeaux

Cedex, France **Responses of central neurones to piribedil and 2-bromo-alpha-ergocriptine: comparison with dopamine and apomorphine.** European Journal of Pharmacology (Amsterdam). 51(1):29-37, 1978.

The effects of two putative dopamine receptor agonists, piribedil and 2-bromo-alpha-ergocryptine, were compared with those of dopamine and apomorphine on neurons of the frontal cortex and caudate nucleus of rats and decerebrate cats. Microiontophoretically applied piribedil and S. 584, its dihydroxyphenyl derivative, displayed a potent dopamine like inhibition in both these areas. Similarly applied 2-bromo-alpha-ergocryptine exerted significant inhibition on cortical neurons that were spontaneously active, but only weak or neglible inhibition on cortical and caudate glutamate driven units. Results suggest that 2-bromo-alpha-ergocryptine mediates its inhibitory effect via a predominant presynaptic action and acts preferentially on cortical neurons. 35 references. (Author abstract modified)

000046 Biswas, Bratati; Carlsson, Arvid. Department of Pharmacology, University of Goteborg, Fack, S-400 33 Goteborg, Sweden **On the mode of action of diazepam on brain catecholamine metabolism.** Naunyn-Schniedeberg's Archives of Pharmacology (Berlin). 303(1):73-78, 1978.

The effect of diazepam on the synthesis of dopamine and other monoamines was investigated in rats and a comparison was made with the action of gamma-aminobutyric acid (GABA) and the GABA-like agent gamma-butyrolactone (GBL). Intraperitoneal injection of diazepam in moderate dosage (1-10mg/kg) caused a decrease in dopa and 5-hydroxytryptophan (5-HTP) formation measured as the accumulation of these intermediates induced by inhibition of the aromatic L-aminoacid decarboxylase by means of NSD 1015 (3-hydroxybenzylhydrazine (HCl), in limbic forebrain, striatum and the remaining hemisphere portion. These effects were opposite to those induced by GABA and BBL and the effects of the latter agents were significantly counteracted by diazepam. The effect of diazepam on dopa formation persisted after the acute transection of dopaminergic axons. The elevation of dopamine following hemisection was also significantly counteracted on the hemisected side of the brain, the intact side remaining unchanged. Data do not support the hypothesis that benzodiazepines act by enhancing GABAergic transmission. It is suggested that these agents exert an inhibitory action on transmitter synthesis and utilization at the synaptic level, an action not necessarily bearing any direct relationship to GABA. 33 references. (Author abstract modified)

000047 Blackburn, Thomas P.; Foster, George A.; Greenwood, David T.; Howe, Ralph. Research Biology Department, ICI Pharmaceuticals Division, Alderley Park, Macclesfield, Cheshire, England **Effects of viloxazine, its optical isomers and its major metabolites on biogenic amine uptake mechanisms in vitro and in vivo.** European Journal of Pharmacology (Amsterdam). 52(3/4):367-374, 1978.

Viloxazine hydrochloride, a chemically novel antidepressant, selectively inhibited noradrenaline (NA) uptake into mouse heart in vivo and into rat brain in vitro. The S-isomer was more than twice as potent as the racemate as an NA uptake inhibitor, both in vivo and in vitro. Viloxazine showed virtually no uptake inhibitory activity against 5-hydroxytryptamine or dopamine in rat brain synaptosomes. Viloxazine showed significantly higher activity in vivo than would be expected on the basis of its in vitro potency. 37 references. (Author abstract modified)

000048 Blanks, Janet C. Department of Neuroscience, Children's Hospital Medical Center, 300 Longwood Avenue, Boston, MA 02115 **Localization of (3H)glycoproteins in the retina of the mouse.** Brain Research (Amsterdam). 152(2):379-385, 1978.

Retinal cell types which accumulate (3H)fucose were identified and (3H)fucose incorporation with respect to the various retinal layers was quantified. Thirty adult mice received intravitreal injections of radioisotope by means of a calibrated pressure injection microelectrode system. Mice were sacrificed at 15 and 30 minutes, at 1, 2, 4, 12, 24, and 96 hours, and at 2 and 3 weeks following injection. Grain counts were made from each retinal layer at the different postinjection survival times. The results show that injected (3H)fucose is not distributed randomly throughout the retina but exhibits a specific temporal and spatial pattern of incorporation. Label first appears in the inner nuclear and ganglion cell layers where it is found primarily concentrated over the cytoplasm of amacrine and ganglion cells. The data support the hypothesis that glycoproteins are manufactured in the cell body and subsequently migrate down the axon to the nerve terminal regions. Electron microscopic autoradiographic studies are recommended to determine whether the label is limited to the pigment epithelium or is also in the tips of the photoreceptor outer segments. 17 references.

000049 Bodor, Nicholas; Roller, Richard G.; Selk, Sally J. INTERx Research Corporation, Lawrence, KS 66044 **Elimination of a quaternary pyridinium salt delivered as its dihydropyridine derivative from brain of mice.** Journal of Pharmaceutical Sciences. 67(5):685-687, 1978.

A pyridinium salt/dihydropyridine redox system was used to study the rate of elimination of a small quaternary salt from mouse brain. Results showed that 1-methylpyridine-2-carbaldehyde oxime was eliminated from brain relatively rapidly, supporting the hypothesis for the existence of an active transport mechanism for eliminating organic ions from the brain. The possibilities of using the pyridinium salt/dihydropyridine redox system for specific delivery of drugs to the brain is discussed. 13 references. (Author abstract modified)

000050 Boissier, J. R. 188, Avenue Victor-Hugo, F-75116 Paris, France. **General pharmacology of ergot alkaloids.** Pharmacology (Basel). 16(Suppl. 1):12-26, 1978.

The general pharmacodynamic actions of ergot alkaloids are discussed. Ergot alkaloids have a wide and divergent spectrum of central and peripheral actions. They interfere with different receptor sites to stimulate and/or inhibit effector structures. The concept of partial agonism on alpha-adrenoreceptors has replaced the ancient hypothesis of direct stimulation of vascular and uterine smooth muscle. The mechanisms which are considered the relevant for the therapeutic use of dihydroergotamine, a potent drug increasing venous tone. and of bromocriptine, a specific inhibitor of prolactin secretion, are discussed. 8 references. (Author abstract modified)

000051 Bolme, Per; Fuxe, Kjell; Agnati, Luigi F.; Bradley, Ronald; Smythies, John. Department of Histology, Karolinska Institutet, S-10401 Stockholm 60, Sweden **Cardiovascular effects of morphine and opioid peptides following intracisternal administration in chloralose-anesthetized rats.** European Journal of Pharmacology (Amsterdam). 48(3):319-324, 1978.

In a study of cardiovascular effects of morphine and opioid peptides following intracisternal administration in chloralose-anesthetized Sprague/Dawley rats, it was found that beta-endorphin, morphine and D-ala2-met-enkephalinamide administered intracisternally produced preferential vasodepressor responses and bradycardia. Leu-enkephalin, met-enkephalin and alpha-endorphin administered in the same way produced preferential vasopressor effects and the latter two peptides also produced bradycardia. Results obtained with naloxone given intracisternally

indicate that the pressor and depressor actions as well as the bradycardia are mediated through opiate receptors. The results indicate that opioid peptides may be involved in central cardiovascular control. 10 references. (Author abstract modified)

000052 Bonnet, Kenneth A.; Branchey, Laure B.; Friedhoff, Arnold J.; Ehrlich, Yigal H. Department of Psychiatry, New York University Medical Center, New York, NY 10016 **Long-term narcotic exposure reduces caudate cyclic nucleotide levels, protein phosphorylation and tyrosine hydroxylase activities.** Life Sciences. 22(22):2003-2008, 1978.

Following chronic morphine treatment with increasing doses of morphine base, caudate tissues from male Sprague-Dawley rats had significantly lower levels of cyclic adenosine monophosphate and lower activities of endogenous protein phosphorylation and tyrosine hydroxylase in vitro. Cyclic guanosine monophosphate levels were not significantly different from control levels. The effects of the 3 week incrementing morphine dose treatment were still evident in the biochemical measures of caudate tissues from brains of animals withdrawn and abstinent for 3 weeks. 31 references. (Author abstract modified)

000053 Borison, Richard L.; Maple, Philip J.; Havdala, Henri S.; Diamond, Bruce I. Anesthesiology Department, Mt. Sinai Hospital, California & 15th Place, Chicago, IL 60608 **Metabolism of an amino acid with antidepressant properties.** Research Communications in Chemical Pathology and Pharmacology. 21(2):363-366, 1978.

The metabolism of the amino acid D-phenylalanine, which has antidepressant properties in humans, attributed to its metabolism to brain phenylethylamine, was investigated in mice. The increase in brain phenylethylamine levels induced by L-phenylalanine, but not D-phenylalanine, was antagonized by drugs that block the stereospecific decarboxylase enzyme. Results indicate that D-phenylalanine metabolism to phenylethylamine is independent of pathways involving L-phenylalanine. 6 references. (Author abstract modified)

000054 Bottenstein, Jane E.; de Vellis, Jean. Biology Department, Q-058, University of California, San Diego, La Jolla, CA 92093 **Regulation of cyclic GMP, cyclic AMP and lactate dehydrogenase by putative neurotransmitters in the C6 rat glioma cell line.** Life Sciences. 23(8):821-834, 1978.

In rat glioma C6 cells, norepinephrine (NE) and dopamine caused transient increases in cyclic guanosine monophosphate (GMP) and cyclic adenosine monophosphate (AMP), as well as an induction of lactate dehydrogenase. All these responses were blocked by 1-propranolol, suggesting mediation by a beta-receptor. Phentolamine potentiated the NE increased cyclic AMP levels by 5-fold when NE was used at suboptimal doses, suggesting the presence of alpha-adrenergic receptors in C6 cells. Carbamylcholine decreased the levels of both cyclic nucleotides, with hexamethonium partialy reversing the effect on cyclic GMP. Dibutyryl cyclic GMP or carbamylcholine reduced catecholamine induced increased in cyclic AMP levels. Serotonin increased cyclic GMP levels 60% and decreased cyclic AMP levels 36%. NE induced elevations in cyclic GMP and cyclic AMP were inhibited by calcium and magnesium free media, respectively. 39 references. (Author abstract)

000055 Bourgoin, S.; Artaud, F.; Bockaert, J.; Hery, F.; Glowinski, J.; Hamon, M. Laboratoire de Physiologie Cellulaine, College de France, 11, place Marcelin Berthelot, F-75231 Paris Cedex, France **Paradoxical decrease of brain 5-HT turnover by metergoline, a central 5-HT receptor blocker.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 302(3):313-321, 1978.

Since metergoline is a potent 5-HT antagonist in peripheral organs, its possible blocking effects on 5-HT receptors in the rat brain were investigated. In vitro, metergoline inhibited both the specific high affinity binding of 3H-5-HT onto synaptosomal membranes (IC 50 = 18nM) and the stimulating effect of 10 mcM 5-HT on the adenylate cyclase activity in colliculi homogenates from newborn rats (IC 50 = 12 mcM). In vivo, the administration of metergoline resulted in a significant decrease in the 3H-5-HT binding capacity of synaptosomal membranes from the forebrain of adult rats. These data indicate that metergoline is a potent blocker of some serotoninergic receptors in the rat brain. The results are discussed in relation to the possible existence of several types of serotoninergic receptors in the rat brain. It is suggested that the positive feedback regulation of 5-HT turnover is triggered by the blockade of serotoninergic receptors sensitive to methiothepin, but not to metergoline. 40 references. (Author abstract modified)

000056 Bradley, P.; Berry, M. Department of Anatomy, Medical School, Bristol University, Bristol, England **Quantitative effects of methylazoxymethanol acetate on Purkinje cell dendritic growth.** Brain Research (Amsterdam). 143(3):499-511, 1978.

A quantitative analysis was made of alterations in the dendritic organization of Purkinje cells in the cerebellum of the Wistar rat following the administration of the degranulating agent, methylazoxymethanol acetate. The drug depleted the granule cell population of the cerebellar cortex and disturbed Purkinje cell alignment such that a number of Purkinje cells became inverted and grew in the white matter. The quantitative changes that occurred in the dendritic trees of these cells (increase in segment length; decreases in segment numbers, trichotomy, and branching probability) were similar to the those seen following other degranulation procedures. The size of the Purkinje cell dendritic tree was correlated with the number of parallel fibers present in the molecular layer. Results are discussed in relation to current theories of neuronal development and the filopodial attachment hypothesis of dendritic growth. 41 references. (Author abstract modified)

000057 Braestrup, Claus; Squires, Richard F. Research Laboratories, A/S Ferrosan, Sydmarken 1-5, DK-2860 Soeborg, Denmark **Pharmacological characterization of benzodiazepine receptors in the brain.** European Journal of Pharmacology (Amsterdam). 48(3):263-270, 1978.

Receptors in rat brain membranes which specifically bind 3H-diazepam were characterized pharmacologically using reference substances representing several pharmacological classes of drugs. Of 28 benzodiazepines tested, several classical ones (diazepam, clonazepam, lorazepan, oxazepam, nitrazepam, flurazepam, bromazepam and chlorazepate) with known clinical efficacy, as well as three newer triazolo benzodiazepines (estazolam, U 35,005, U 31,957), one new imidazolo benzodiazepine, U 31,219, and one new 2-carbamoylmethylene-benzodiazepine, displaced 3H-diazepam binding at low concentrations. For these benzodiazepines there was a statistically significant correlation between Ki values for displacement and ED50 (or MED) values in several pharmacological tests predictive of anxiolytic activity in man. More than 100 nonbenzodiazepines, representing 22 distinct pharmacological classes as well as 14 presumed neurotransmitters in the CNS, including four peptides, were much weaker as 3H-diazepam displacers. These results suggest that in vitro 3H-diazepam binding represents the physiologically relevant binding to hitherto unkown receptors in the CNS. 17 references. (Author abstract)

000058 Breese, G. R.; Mailman, R. B.; Ondrusek, M. G.; Harden, T. K.; Mueller, R. A. Biological Sciences Research Center, University of North Carolina, School of Medicine,

Chapel Hill, NC 27514 **Effects of dopaminergic agonists and antagonists on cerebellar guanosine-3',5'-monophosphate (cGMP).** Life Sciences (Oxford). 23(5):533-536, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, the effects of dopaminergic agonists and antagonists on cerebellar guanosine-3',5'-monophosphate (cGMP) in Sprague-Dawley rats are reported. Apomorphine caused an increase in cerebellar cGMP content. Bromocriptine, at a dose that caused sterotypy, neither elevated cGMP nor blocked the apomorphine induced raise in cGMP. The apomorphine induced rise in cGMP was effectively blocked by haloperidol and some other neuroleptics, but not by sulpiride. These actions of the neuroleptics correlated with their ability to displace 3H-spiroperidol from striatal membranes, suggesting that dopamine receptor interactions were important in the cGMP changes. Haloperidol antagonized the increase in cGMP induced by restraint, suggesting that dopaminergic systems are involved in the reaction to stress. 9 references. (Author abstract modified)

000059 Briley, Michael S.; Langer, Salomon Z. Synthelabo, LERS Department of Biology, 58 Rue de la Glaciere, 75013 Paris, France **Influence of GABA receptor agonists and antagonists on the binding of 3H-diazepam to the benzodiazepine receptor.** European Journal of Pharmacology (Amsterdam). 52(1):129-132, 1978.

The gamma-aminobutyric acid (GABA) receptor agonists, GABA and muscimol, increased the affinity of the benzodiazepine receptor for 3H-diazepam in rat brain cortical membranes. The GABA receptor antagonist, ()-bicuculline, decreased the affinity of the benzodiazepine receptor for 3H-diazepam. These effects were seen at both 0 and 25 degrees, despite a large difference of affinity for 3H-diazepam at the two temperatures. 9 references. (Author abstract modified)

000060 Brown, B.; Dettmar, P. W.; Dobson, Pauline R.; Lynn, A. G.; Metcalf, G.; Morgan, B. A. Department of Nuclear Medicine, Middlesex Hospital, Mortimer Street, London W1N 8AA, England **Opiate analgesics: the effect of agonist-antagonist character on prolactin secretion.** Journal of Pharmacy and Pharmacology (London). 30(10):644-645, 1978.

The effects of buprenorphine and cyclazocine on prolactin secretion were compared with those of opiate agonists and antagonists in male Sprague-Dawley rats. Morphine (10mg/kg subcutaneously) and two enkephalin analogues induced rises in plasma prolactin concentrations in vivo, which were antagonized by prior administration of naloxone (3mg/kg, subcutaneously). Naloxone also lowered basal prolactin concentrations, suggesting that endogenous opioid peptides may be involved in the modulation of prolactin secretion. The peptide opiate agonists did not act directly on the anterior pituitary, indicating that their modulatory action occurs in the central nervous sytem rather than in the pituitary itself. The partial agonist analgesics buprenorphine and cyclazocine did not induce prolactin secretion. 11 references.

000061 Brown, D. A.; Marsh, S. Department of Pharmacology, School of Pharmacy, University of London, London WC1N 1AX, England **Axonal GABA-receptors in mammalian peripheral nerve trunks.** Brain Research (Amsterdam). 156(1):187-191, 1978.

Gamma-aminobutyric acid (GABA) receptors were identified along the lengths of unmyelinated axons in peripheral (cervical vagus) nerve trunks isolated from young rats. GABA appeared to act primarily by increasing chloride conductance. Results indicate that mammalian unmyelinated nerve cell membranes are uniformly sensitive to GABA and suggest that GABA receptors are a ubiquitous component of mammalian nerve cell membranes, rather than being confined to neuron somata. 24 references.

000062 Bryce, Graeme F.; Jacoby, Jacob H. Department of Cell Biology, Roche Research Center, Hoffman-La Roche Inc, Nutley, NJ 07110 **A comparative study of several serotonin receptor antagonists on basal and stimulus induced release of insulin and glucagon in the intact rat.** Life Sciences. 22(24):2215-2224, 1978.

Several commonly used serotonin receptor antagonists were tested for ability to influence basal plasma insulin and glucagon levels and hormone responses to a glucose or arginine challenge. Cyproheptadine, in contrast to other antagonists tested, induced large increases of insulin, glucagon, and glucose. However, hormone levels were increased even more during an equivalent hyperglycemia resulting from glucose administration. The pancreatic response to a glucose load (increased insulin and decreased glucagon release) and an arginine load (increased insulin and glucagon release) were prevented by cyproheptadine pretreatment. Basal insulin levels were not consistently altered by methysergide or cinanserin and were slightly elevated by metergoline. Basal glucagon levels were unaffected by these drugs. These three agents potentiated the insulinotropic effect of an arginine load, but only metergoline exerted a similar effect on the response to glucose loading. Glucagon release in response to these stimuli was not significantly altered by drug pretreatment. 34 references. (Author abstract modified)

000063 Buckingham, Julia C.; Hodges, J. R. Department of Pharmacology, Royal Free Hospital School of Medicine, 8 Hunter Street, London WC1N 1BP, England **The effects of some neurotransmitter substances on the production of corticotrophin releasing factor by the rat hypothalamus in vitro.** British Journal of Pharmacology (London). 63(2):343-344, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society in Guildford, England, the effects of neurotransmitter substances on the production of corticotrophin releasing factor (CRF) by the rat hypothalamus in vitro are reported. Acetylcholine (ACh) and 5-hydroxytryptamine (5-HT) caused dose related increases in CRF synthesis and release; ACh effects were antagonized by atropine, hexamethonium, and cyproheptadine, and 5-HT effects were antagonized by methysergide and cyproheptadine. Noradrenaline (NA) also reduced the responses to ACh and 5-HT. The actions of NA were mimicked by adrenaline, phenylephrine, and methoxamine but not by isoprenaline; NA effects were antagonized by phentolamine but not by atenolol. Results indicate the existence of cholinoceptors, 5-HT receptors, and alpha-adrenoceptors in the hypothalamus, all of which may be involved in the control of the synthesis and release of CRF. 3 references. (Author abstract modified)

000064 Bunney, B. S.; Aghajanian, G. K. Department of Psychiatry, Yale University School of Medicine, New Haven, CT 06510 **d-Amphetamine-induced depression of central dopamine neurons: evidence for mediation by both autoreceptors and a striato-nigral feedback pathway.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(3):255-261, 1978.

The mechanism by which intravenous d-amphetamine (d-A) depresses the activity of dopamine (DA) containing neurons in the substantia nigra was studied in anesthetized rats using single cell recording and microiontophoretic techniques. Kainic acid (KA) injections into the caudate nucleus were used to selectively destroy neuronal feedback pathways to the substantia nigra from the striatum. KA lesions caused a five fold increase in the amount of d-A needed to produce 50% inhibition of DA cells. Relatively low doses of d-A caused DA cells to temporarily

cease firing completely in unlesioned animals, while even near lethal doses did not cause total abolition of firing of DA cells in KA lesioned rats. Low nonconvulsant doses of the gamma-aminobutyric acid (GABA) antagonist, picrotoxin, reversed d-A induced depression of DA cells in nonlesioned animals, but even high doses had no effect in lesioned rats. These findings suggest that at low doses, intravenous d-A produces its depressant effects on DA cells primarily through a striato-nigral feedback pathway, one link of which is GABA mediated. At high doses, d-A appears to also inhibit DA cells through an action within the substantia nigra. Microiontophoretically applied DA was equally potent in inhibiting DA cells in nonlesioned, KA lesioned, and picrotoxin treated rats; this action appeared to be mediated by an interaction with DA autoreceptors and not by the release of GABA from afferent terminals. 53 references. (Author abstract modified)

000065 Burki, Hans R. Research Institute Wander, Wander Ltd., P.O. Box 2747, Berne, Switzerland **Correlation between 3H-haloperidol binding in the striatum and brain amine metabolism in the rat after treatment with neuroleptics.** Life Sciences (Oxford). 23(5):437-441, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, the effects of haloperidol, clothiapine, loxapine, chlorpromazine, thioridazine, clozapine, perlapine, and 7-chloro-4-(4-methyl-1-piperazinyl)-10H-thieno(3,2-c)-benzazepine (NT-104-252) on 3H-haloperidol binding in the striatum and on brain amine metabolism are reported. After pretreatment of the test drugs, male Sprague-Dawley rats were decapitated; the striata were removed and homogenized in tris buffer containing pargyline, ascorbic acid, ethylene glycol-bis-(beta-aminoethylether)-N,N'-tetraacetic acid, and various salts. After centrifugation the homogenates were incubated with 3H-haloperidol, and total and unspecifically bound 3H-haloperidol were measured. Excellent correlations were found between inhibition of specific 3H-haloperidol binding and increases in the striatal concentration of 3,4-dihydroxyphenylacetic acid induced by the neuroleptics, indicating that dopamine (DA) receptor blockade provokes an increase in DA metabolism. No correlation was found with neuroleptic induced changes in the concentration of 3-methoxy-4-hydroxyphenylglycol sulphate in the brainstem or of 5-hydroxyindoleacetic acid in the cortex. Results indicate that inhibition of specific 3H-haloperidol binding is due to drug effects only on DA receptors. 4 references. (Author abstract modified)

000066 Burne, J. A. Department of Physiology, University of New England, Armidale, New South Wales, Australia. **The action of Erabutoxin 'b' in the cerebral cortex: evidence for short latency potentially nicotinic neurones.** Life Sciences. 23(8):775-782, 1978.

Many rat somatosensory cortical neurons responded to iontophoresis of acetylcholine with a short latency excitatory response. Some of these responses were antagonized by a Laticauda neurotoxin, Erabutoxin b; this effect was reproduced by curare, suggesting the presence of nicotinic receptors. The results support the possibility of using snake neurotoxins to characterize central cholinergic receptors. 19 references. (Author abstract)

000067 Burt, David R. Department of Pharmacology and Experimental Therapeutics, University of Maryland School of Medicine, Baltimore, MD 21201 **Muscarinic receptor binding in rat sympathetic ganglia is unaffected by denervation.** Brain Research (Amsterdam). 143(3):573-579, 1978.

Muscarinic receptor binding in denervated superior cervical ganglia from male Wistar rats was investigated. The binding of tritiated quinuclidinyl benzilate in denervated ganglia did not differ significantly from that in control ganglia 3, 15-17, or 29-33 days after denervation. Results are discussed in relation to electrophysiological data suggesting an increase in muscarinic receptors in denervated ganglia. 50 references.

000068 Butler, S. R.; Hurley, T. W.; Schanberg, S. M.; Handwerger, S. Duke University Medical Center, Durham, NC 27710 **Ovine placental lactogen stimulation of ornithine decarboxylase activity in brain and liver of neonatal rats.** Life Sciences (Oxford). 22(23):2073-2078, 1978.

The somatotropic properties of ovine placental lactogen (oPL) were studied. OPL, prolactin (oPRL), growth hormone (oGH), and human placental lactogen (hPL) were administered intracisternally (ic) or intraperitoneally (ip) to 17-day-old rats, and brain and liver ornithine decarboxylase (ODC) activities were determined 4 hours later. When administered ic, oPL, oGH, and oPEL caused significant increases in brain ODC activity, while hPL had no significant effect. After ip administration, oPL and oGH also caused significant increase in brain as well as liver ODC activity, but oPRL and hPL were without significant effect. The stimulation of polyamine metabolism by oPL together with earlier reports of its potent somatotropic effects and its high concentration in the fetus supports the hypothesis that oPL may be important in the regulation of fetal growth. 17 references. (Author abstract modified)

000069 Carenzi, A.; Frigeni, V.; Della Bella, D. Zambon S.p.A. Research Laboratories, I-20091 Bresso-Milan, Italy **Synaptic localization of opiate receptors in rat striatum.** Advances in Biochemical Psychopharmacology. 18:265-270, 1978.

The effects of nigrostriatal pathway lesions induced by 6-hydroxydopamine (6-OHDA) or kainic acid in male Wistar rats on tritiated dihydromorphine (3H-DHM) and tritiated methionine-enkephalin stereospecific finding (SSB) to striatal membrane preparations were examined. Results indicate that at least 30-40% of opiate receptors are localized on the presynaptic dopaminergic nerve terminals. The injection of 6-OHDA into the substantia nigra produced a very small lesion in the striatum compared to that induced by intrastriatal injection of kainic acid, suggesting that opiate receptors are highly concentrated on the dopaminergic terminals of nigrostriatal neurons. Although a possible conformational change in opiate receptors due to the decrease in dopamine in lesioned striata could not be excluded, preliminary studies with naloxone indicate that the loss of DA does not lead to a change of opiate receptors from the agonist to antagonist form. The presence of receptors for morphine and methionine-enkephalin on presynaptic dopaminergic terminals is in agreement with the suggested role of opiates in the regulation of dopamine release. However, the decrease of 3H-DHM SSB after kainic acid lesion may indicate that striatal opiate receptors are associated not only with nerve terminals but also with axodendritic or axosomatic synapses. 16 references.

000070 Carlsson, A.; Lindqvist, M. Department of Pharmacology, University of Goteborg, Fack, S-40033 Goteborg, Sweden **Dependence of 5-HT and catecholamine synthesis on concentrations of precursor amino-acids in rat brain.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 303(2):157-164, 1978.

The short-term influence of varying concentrations of the precursors tryptophan and tyrosine on the formation of 5-hydroxytryptophan and Dopa, respectively, in three different rat brain regions was investigated. The concentrations of the precursors were either increased by the intraperitoneal administration of

the respective precursor or decreased by loading with large neutral amino acids competing with the precursors for the same carrier mechanism. The formation of 5-hydroxytryptophan was found to depend on the level of tryptophan in the brain in a manner predicted from published kinetic data, except when large doses of nonprecursor amino acids had been given. In the latter case, the hydroxylation of tryptophan was less rapid than expected. It is concluded that under normal conditions, tryptophan hydroxylase in the rat brain is about half saturated with its amino acid substrate, whereas tyrosine hydoxylase appears to be about 75% saturated. 14 references. (Author abstract modified)

000071 Carter, C. J.; Pycock, C. J. Department of Pharmacology, Medical School, University of Bristol, Bristol BS8 1TD, England **A study of the sites of interaction between dopamine and 5-hydroxytryptamine for the production of fluphenazine-induced catalepsy.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(2):135-139, 1978.

The effect of reducing 5-hydroxytryptamine (5-HT) concentration within various areas of the central dopamine (DA) system on catalepsy was investigated in male Porton rats. The neurotoxin 5,7-dihydroxytryptamine was used to selectively deplete 5-HT in the striatum, nucleus accumbens septi, tuberculum olfactorium, or substantia nigra. Localized depletion of 5-HT within the nucleus accumbens septi and substantia nigra reduced the cataleptic effects of fluphenazine, but lesions of the striatum or tuberculum olfactorium were without effect. Each injection of the neurotoxin resulted in a 38-47% depletion of 5-HT in the target sites, without altering DA levels. Results suggest that DA/5-HT interactions within the nucleus accumbens may contribute to the action of the neuroleptic. The reduction of fluphenazine induced catalepsy produced by 5-HT depletion within the substantia nigra supports the concept of a controlling influence of 5-HT on nigrostriatal DA function. 29 references. (Author abstract)

000072 Casamenti, F.; Mantovani, P.; Pepeu, G. Department of Pharmacology, University of Florence, Viale Morgagni 65, 50134 Florence, Italy **Stimulation of acetylcholine output from brain slices caused by the ionophores BrX-537A and A23187.** British Journal of Pharmacology (London). 63(2):259-265, 1978.

The effect of two ionophores, BrX-537A (Bromolasolacid) and A-23187, on acetylcholine (ACh) output from cerebral cortical slices from male Wistar rats was studied. Both ionophores enhanced ACh output; BrX-537A exerted its maximal effect, a sixfold increase, at a concentration of 7.8mcM. While A-23187 caused a threefold increase at a concentration of 58 mcM. When the slices were incubated in a calcium (Ca) free medium, the effect of A-23187 on ACh output was abolished, while that of BrX-537A was only reduced. BrX-537A activity was not affected by the presence of disodium edetate or tetrodotoxin in the incubation medium. The stimulation of ACh output elicited by potassium chloride (25mM) was increased further by hyoscine, but not by BrX-537A; hyoscine had no effect when ACh output was stimulated by BrX-537A. The effect of BrX-537A on ACh output was potentiated by the addition of magnesium ion (9.3mM) to the incubation medium and was reduced in a magnesium-free medium. It is concluded that A-23187 stimulated ACh output by transporting extracellular Ca2 into cholinergic nerve endings, while the effect of BrX-537A does not depend solely on Ca2. 28 references. (Author abstract modified)

000073 Celis, M. E.; Vivas, A.; Orlowski, Ronald C.; Walter, Roderich. Instituto de Investigation Medica, Mercedes y Martin Ferreyra, 5000 Cordoba, Argentina **Neurohypophyseal hormone fragment-induced release of MSH.** Brain Research (Amsterdam). 149(2):516-518, 1978.

To test for the biological specificity of H-Cys-Tyr-Ile-Gln-Asn-OH, an oxytocin fragment, by evaluating whether peptides with related structures can also stimulate the release of melanocyte stimulating hormone (MSH), pituitary MSH content and MSH serum levels were measured in male rats following administration of the neurohypophyseal hormone fragments. Substances tested were: 1) analogues of H-Cys-Tyr-Ile-Gln-Asn-OH with oxytocin-like sequences shortened stepwise from the NH2 terminus, 2) an identical series of peptides but terminating at the carboxyl terminus in an asparagine amide moiety rather than asparagine, and 3) a selected number of analogous peptides but with a vasopressin-like sequence instead of the oxytocin-like sequence (with a Phe instead of an Ile residue). Results indicate that on a molar basis all of the peptides possess the same activity with the exception of H-Gln-Asn-OH which was found to be inactive. 9 references.

000074 Charli, J. L.; Joseph-Bravo, P.; Palacios, J. M.; Kordon, C. Department of Biochemistry, University of Texas, 5323 Harry Hines Bd, Dallas, TX 75235 **Histamine-induced release of thyrotropin releasing hormone from hypothalamic slices.** European Journal of Pharmacology (Amsterdam). 52(3/4):401-403, 1978.

The effect of histamine (HA) on the release of thyrotropin releasing hormone (TRH) was investigated in mediobasal hypothalamic (MBH) slices from male Wistar rat brains. TRH release was increased in the presence of 56mM potassium in a calcium dependent manner. Addition of HA induced a concentration dependent release of TRH which was inhibited by cimetidine, a potent antagonist of HA H2-receptors. Results suggest that HA can trigger release of TRH from neurosecretory nerve endings and that MBH slices are a useful preparation for studying neurohormone release. 10 references. (Author abstract modified)

000075 Chaudhary, Sunil K.; Chaudhary, Mahima; Chaudhari, Anshumali; Parmar, Surendra S. Environmental Biology and Chemistry Branch, National Institute of Environmental Health Sciences, Research Triangle Park, NC 27709 **Anticonvulsant and antiproteolytic properties of 3,5-disubstituted oxadiazole-2-thiones and their inhibition of respiration in rat brain homogenates.** Journal of Pharmaceutical Sciences. 67(11):1507-1509, 1978.

Eight 5-(3,4-methylenedioxyphenyl)-3-arylaminomethyl-1, 3,4-oxadiazole-2-thiones were synthesized, characterized by their sharp melting points, elemental analyses, and infrared spectra and evaluated for anticonvulsant activity, which was reflected in their ability to provide 10-70% protection against pentylenetetrazol induced convulsion in mice at 100mg/kg ip. These compounds inhibited in vitro nicotinamide adenine dinucleotide (NAD) dependent oxidation of pyruvate, alpha-ketoglutarate, and NADH was well as NAD independent oxidation of succinate in rat brain homogenates reflected in their ability to inhibit trypsin hydrolysis of bovine serum albumin. Results indicate that the inhibition of cellular respiration and antiproteolytic activity of the substituted oxadiazole-2-thiones is not the biochemical basis for their anticonvulsant activity. 16 references. (Author abstract)

000076 Cheramy, Andre; Nieoullon, Andre; Glowinski, Jacques. Groupe NB, INSERM U.114, College de France, 11, place Marcelin Berthelot, F-75231 Paris cedex 5, France **GABAergic processes involved in the control of dopamine release from nigrostriatal dopaminergic neurons in the cat.** European Journal of Pharmacology (Amsterdam). 48(3):281-295, 1978.

In a study of GABAergic processes involved in the control of dopamine release from nigrostriatal dopaminergic neurons in the cat, push/pull cannulae were used to study the release of 3H-dopamine (3H-DA) continuously synthetized from L-3,5-3H-tyro-

sine in the caudate nucleus and the substantia nigra of the encephale isole cat. GABA muscimol gamma-hydroxybutyrate (GHB), GABA-choline (GABA-CH), and amino-oxyacetic acid (AOAA) stimulated the release of 3H-DA in the caudate nucleus when introduced for 15 min in the superfusing medium. A marked post stimulatory effect was seen with muscicmol. The stimulation of 3H-DA release in the caudate nucleus induced by a 15 min nigral application of GABA was no longer seen when picrotoxin was added with GABA in the substantia nigra. On the basis of these results it is proposed that at least two types of GABAergic regulatory processes are involved in the control of the activity of the dopaminergic neurons in the substantia nigra. On the other hand, the interaction of GABA or GABA related compounds with GABAergic receptors in the striatum may facilitate DA release from dopaminergic terminals through an intrastriatal interneuronal process. The secondary inhibition of 3H-DA release induced by GABA or GHB could be mediated by a nonGABAergic striato nigral pathway. 58 references. (Author abstract modified)

000077 Chiba, Tanemichi; Kato, Makoto. Department of Anatomy, School of Medicine, Chiba University, Chiba 280, Japan **Synaptic structures and quantification of catecholaminergic axons in the nucleus tractus solitarius of the rat: possible modulatory roles of catecholamines in baroreceptor reflexes.** Brain Research (Amsterdam). 151(2):323-338, 1978.

The synaptic organization of the nucleus tractus solitarius (NTS) of the rat at the level of the obex was studied using fluorescence and electron microscopy in 5 groups of animals: normal control, intraventricular injection of 5-hydroxydopamine (5-OHDA), intraventricular injection of 6-hydroxydopamine (6-OHDA), intracranial denervation of the IXth and Xth cranial nerves, and intraventricular injection of 5-OHDA 48 hours after intracranial denervation of the IXth and Xth cranial nerves. A dense network of catecholaminergic nerves was observed in the NTS and several catecholaminergic neurons were seen to be scattered in the lateral portion of the NTS. Nerve cells in the NTS were small in size. After treatment with 5-OHDA, 2.4% of axon varicosities were identified as catecholaminergic by small dense-cored vesicles. After administration of 6-OHDA, 5.19% of dense degenerated axon varicosities were counted. After intracranial deafferentation of the IXth and Xth cranial nerves, 5.3% of dense degenerated axon varicosities were found. The total number of axon varicosities were found. The total number of axon varicosities in a 6800 sq. micrometer area was decreased by 9% after the injection of 6-OHDA and 11% after deafferentation of the IXth and Xth cranial nerves. At least 3 types of axons could be identified: 1) catecholaminergic axons with small dense cored vesicles after 5-OHDA administration, 2) afferent axons from the IXth and Xth cranial nerves with small clear vesicles, and 3) axons with small clear vesicles, probably orignated from the supramedullary nucleus. Results suggest that catecholamines modulate reflex blood pressure regulation within the NTS of the rat. 42 references. (Author abstract modified)

000078 Childers, Steven R.; Schwarcz, Robert; Coyle, Joseph T.; Snyder, Solomon H. Department of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Radioimmunoassay of enkephalins: levels of methionine- and leucine-enkephalin in morphine-dependent and kainic acid-lesioned rat brains.** Advances in Biochemical Psychopharmacology. 18:161-173, 1978.

The effects of kainic acid lesions and cortical ablations on striatal enkephalin and opiate receptor levels were investigated in male Sprague-Dawley rats. Microinjections of kainic acid into the striatum resulted in a 50% decrease in striatal enkephalin levels, suggesting that about half of the striatal enkephalin arises from neurons intrinsic to the striatum. Cortical ablation had no effect on striatal enkephalin levels, indicating that the cortex does not provide significant enkephalinergic projections to the striatum. Tritiated naloxone binding to striatal membranes was reduced 40% by striatal kainic acid lesions and 40% by cortical ablations, indicating that part of the opiate receptor population in the striatum arises from neurons intrinsic to the striatum and part is probably presynaptic on nonenkephalinergic cortical projections to the striatum. Results support the suggestion that enkephalins modulate release of other transmitters in parts of the CNS via axoaxonic synapses. No effects of chronic morphine treatment alone or in combination with naloxone on hypothalamic, striatal, or whole brain levels of leucine-enkephalin, methionine-enkephalin, or total opioid activity were observed. 24 references.

000079 Chiu, Ted H.; Rosenberg, Howard C. Department of Pharmacology, Medical College of Ohio, Toledo, OH 43699 **Reduced diazepam binding following chronic benzodiazepine treatment.** Life Sciences. 23(11):1153-1158, 1978.

Specific 3H-diazepam binding was measured in male Sprague-Dawley rat cortex after 7-10 days of twice daily injections of a large dose of flurazepam. Compared to cortex taken from saline treated controls, the flurazepam treated cortex showed a significant decrease (15%) in maximum binding capacity (Bmax). In addition, the dissociation constant (Kd) changed from 5.27 to 8.80nM. Repeated washing of the tissue sample before the binding assay showed that the Bmax had actually decreased in the treated animals, but the change in Kd was probably an artifact due to residual flurazepam in the tissue. It is concluded that chronic benzodiazepine treatment caused an apparent decrease in the number of specific bindings sites. 15 references. (Author abstract modified)

000080 Christoph, Greg R.; Kuhn, Donald M.; Jacobs, Barry L. Program in Neurosciences, Department of Psychology, Princeton University, Princeton, NJ 08540 **Dopamine agonist pretreatment alters LSD's electrophysiological action from dopamine agonist to antagonist.** Life Sciences. 23(21):2099-2110, 1978.

Intravenous administration of 50microg/kg d-lysergic acid diethylamide (LSD) significantly depressed the discharge rate of dopamine (DA) containing neurons in the substantia nigra of chloral hydrate anesthetized Sprague-Dawley rats. However, when this same dose of LSD was administered to rats whose nigral cell discharge had been reduced 45% below baseline by d-amphetamine (mean dose, 1.45mg/kg), the discharge rate was significantly increased, and generally returned to the preamphetamine baseline level. A similar pattern was observed when LSD was administered to apomorphine pretreated animals. Brom-LSD, a nonhallucinogenic cogener of LSD, also produced these reversal effects. These effects of LSD resemble those of classical central DA antagonists such as haloperidol. It is hypothesized that the shift in LSD's action from that of DA agonist to antagonist by prior DA agonist treatment may be mediated by a conformational shift in the state of the DA receptor. 34 references. (Author abstract)

000081 Ciaranello, Roland D.; Wong, Dona L.; Berenbeim, David M. Child Psychiatry Program, Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, CA 94305 **Regulation of phenylethanolamine N-methyltransferase synthesis and degradation. II. Control of the thermal stability of the enzyme by an endogenous stabilizing factor.** Molecular Pharmacology. 14:490-501, 1978.

The biochemical and biophysical properties of phenylethanolamine N-methyltransferase in hypophysectomized and normal rats was studied. The levels of rat adrenal phenylethanolamine N-methyltransferase were shown to fall dramatically following

hypophysectomy and return to normal values by the administration of adrenocorticotrophin or glucocorticoids. Studies using combined radiolabeling and immunochemical techniques revealed that hypophysectomy accelerated degradation of the enzyme and that proteolysis of the enzyme in vivo is under regulation by glucocorticoids. After hypophysectomy, the stability of phenylethanolamine N-methyltransferase at 50 degrees was profoundly reduced, suggesting that concomitant with the increased susceptibility of the enzyme to proteolysis in vivo, is an enhanced vulnerability to thermal denaturation in vitro. The thermal stability of the enzyme seemed to be regulated by a freezing/thawing/labile, dialyzable substance present in the adrenal glands of normal rats. This material, termed stabilizing factor, was lost after hypophysectomy and could be restored by the administration of ACTH or dexamethasone. The stabilizing factor appeared to act by binding to phenylethanolamine N-methyltransferase and could be dissociated from the immunoadsorbed enzyme by washing. The partially purified stabilizing factor has an absorption maximum of 264 nm; preliminary results indicate that it may be S-adenosylmethionine. It is suggested that binding of the enzyme to S-adenosylmethionine confers stability against proteolysis in vivo and termal denaturation in vitro. 10 references. (Author abstract modified)

000082 Clemens, James A.; Roush, Michael E.; Fuller, Ray W. Lilly Research Laboratories, Indianapolis, IN 46206 **Evidence that serotonin neurons stimulate secretion of prolactin releasing factor.** Life Sciences. 22(24):2209-2214, 1978.

The mode of action of serotonergic stimuli in the control of prolactin release was investigated in male Sprague-Dawley rats. The amount of prolactin secreted after administration of 30mg/kg 5-hydroxytryptophan (5HTP) to rats pretreated with fluoxetine (10mg/kg) was compared to the amount released in rats treated with alpha-methyl-p-tyrosine methyl ester (AMPT) or dopamine receptor blocking agents (pimozide, chlorpromazine, and fluphenazine). In every experiment, the serotonergic stimulus provided by 5-HTP in fluoxetine treated rats released considerably more prolactin than did treatment with AMPT of dopaminergic blockers. It is concluded that serotonin releases prolactin not by inhibiting dopaminergic neurons but by stimulating the release of prolactin releasing factor. 13 references. (Author abstract modified)

000083 Clement-Cormier, Yvonne; Abel, Marc. Department of Pharmacology, University of Texas Medical School, Houston, TX 77030 **(3H)2-amino,6,7-dihydroxy 1,2,3,4-tetrahydronapthalene (ADTN): a potential specific dopamine receptor ligand.** Research Communications in Chemical Pathology and Pharmacology. 22(1):15-25, 1978.

The characteristics of tritiated 2-amino-6,7-dihydroxy-1,2,3,4-tetrahydronapthalene (ADTN) binding to calf striatal membranes were investigated. Results indicate that tritiated ADTN binds with high affinity and stereospecificity to a preparation of crude synaptic membranes. Dopamine agonists were more potent inhibitors of ADTN binding than were dopamine antagonists. Kinetic analysis indicates that (3H)ADTN binds to dopamine recognition sites in a manner comparable to dopamine itself. Results suggest that ADTN may be a useful ligand for the characterization of agonist requirements for recognition by dopamine binding sites. 17 references. (Author abstract modified)

000084 Clements-Jewery, S. Biochemical Pharmacology Section, Research Division, Roussel Laboratories Ltd., Swindon, Wiltshire, England **The development of cortical beta-adrenoceptor subsensitivity in the rat by chronic treatment with trazodone, doxepin and mianserine.** Neuropharmacology (Oxford). 17(9):779-781, 1978.

Chronic treatment of male CF HB rats with 10mg/kg/day trazodone, doxepin, or mianserine decreased the specific binding of tritiated dihydroalprenolol to cortical preparations to 21%, 65%, and 82% of control value, respectively. Acute treatment with these antidepressant drugs did not significantly affect binding of the beta-adrenergic antagonist. It is suggested that mechanisms other than uptake blockade may contribute to the antidepressant effects of these drugs. 10 references. (Author abstract modified)

000085 Clineschmidt, Bradley V.; McGuffin, Jodie C.; Pflueger, A. Barbara; Totaro, James A. Merck Institute for Therapeutic Research, West Point, PA 19486 **A 5-hydroxytryptamine-like mode of anorectic action for 6-chloro-2-(1-piperazinyl)-pyrazine (MK-212).** British Journal of Pharmacology (London). 62(4):579-589, 1978.

The mechanism of the reduction in food consumption elicited by 6-chloro-2-1-piperazinyl-pyrazine (MK-212) administered systemically was investigated in the rat. (Plus or minus)-Fenfluramine and ()-amphetamine were included in some studies for comparative purposes. Pretreatment with methergoline, a 5-hydroxytryptamine (5-HT) antagonist, reduced the magnitude of the anorectic effect of 1.5and 3 mg/kg of MK-212, while the anti-5-HT agents, cyproheptadine and cinanserin, were likewise effective against the 3 mg/kg dose. Xylamidine, an antagonist of 5-HT that penetrates poorly into the central nervous system, completely blocked the decrease in food intake caused by 5-HT administered peripherally, while not antagonizing an equianorectic dose of MK-212. Reduction of brain 5-HT by intraventricular injection of 5,6-dihydroxytryptamine, intraperitoneal administration of p-chloroamphetamine or placement of a lesion in the region of the median raphe nucleus diminished the anorectic response to 3 mg/kg of MK-212. Haloperidol, which blocks receptors for dopamine, antagonized the anorexigenic effect of amphetamine, but was ineffective in offsetting the action of MK-212, 3 mg/kg. Pretreatment with chlorimipramine to inhibit the 5-hydroxytryptaminergic uptake mechanism did not affect the anorectic response to 3 mg/kg of MK-212, whereas the response to fenfluramine was diminished. The results indicate that the anorectic action of MK-212 involves a 5-HT-like component which is more evident at the higher dose level of the compound. The anorexigenic property of MK-212 may depend, at least partly, upon tthe integrity of 5-HT containing neurons in the central nervous system. 41 references. (Author abstract modified)

000086 Cocchi, Daniela; Locatelli, Vittorio; Carminati, Roberto; Muller, Eugenio E. Department of Pharmacology, University of Milan, Milan, Italy **Mechanisms underlying the prolactin-lowering effect of metergoline in the rat.** Life Sciences. 23(9):927-936, 1978.

The effects of metergoline (MGE), an ergoline derivative with antiserotonergic activity, on prolactin (PRL) release were investigated in Sprague-Dawley rats. MGE administered by oral, intraperitoneal, or subcutaneous routes to reserpinized animals was an effective and longlasting antiPRL agent. MGE lowered PRL in hypophysectomized rats with ectopic anterior pituitaries (AP) when administered parenterally, but was completely ineffective when administered orally. In rats with CNS/AP disconnection, blockade of pituitary dopamine receptors by pimozide completely prevented the PRL lowering effect of MGE, but treatment with 5-hydroxytryptophan (5-HTP) did not impair the effect of MGE on PRL release. In intact male rats, oral administration of MGE completely antagonized the PRL releasing effects of quipazine and 5-HTP. MGE slightly inhibited PRL release from AP fragments in vitro. 41 references. (Author abstract modified)

000087 Coleman-Riese, Dorothy; Cutler, Robert W. P. Department of Neurology, Stanford University, Stanford, CA 94305 **Inhibition of gamma-aminobutyric acid release from rat cerebral cortex slices by barbiturate anesthesia.** Neurochemical Research. 3(4):423-429, 1978.

Amobarbital and pentobarbital anesthesia inhibited the potassium stimulated, calcium dependent release of gamma-aminobutyric acid (GABA) from male Sprague-Dawley rat cerebral cortical slices during incubation in vitro. Inhibition of GABA release was not found when slices were prepared from rats shortly after they awakened from amobarbital anesthesia. Phenobarbital anesthesia did not affect the release of GABA. 15 references. (Author abstract modified)

000088 Collins, Robert C. Dept. of Neurology, Washington University School of Medicine, St. Louis, MO 63110 **Kindling of neuroanatomic pathways during recurrent focal penicillin seizures.** Brain Research (Amsterdam). 150(3):503-517,1978.

Sequential changes in convulsive phenomena were studied using intracortical injections of penicillin as a kindling agent. Rats given 25 units of penicillin every 4 days had a progressive increase in the frequency of contralateral muscle jerks. Unilateral tonic/clonic events began after the third injection, and bilateral jerks of both upper extremities began subsequent to that. No generalized convulsions occurred, and further changes in focal convulsions stopped after seven injections. Animals studied with deoxyglucose autoradiography during kindling with 25 units showed an increase in the size and intensity of metabolic activity in the seizure focus. In addition, there was an increase in size and intensity of most transynaptic sites, with new activity appearing in contralateral basal ganglia. A comparison of these findings with the autoradiographic results of animals receiving 100 units of penicillin suggests that the major change during kindling takes place in the focus itself. The appearance of new activity in contralateral basal ganglia is probably an expression of activity in crossed corticostriate pathways from the focus as well as pathways descending from the homotopic cortex in an obligatory input/output response. Use of these pathways is not dependent on kindling, but is available on a first come basis if the intensity of discharges from the seizure focus is strong enough. 30 references. (Author abstract modified)

000089 Collins, Robert C. Department of Neurology, Washington University School of Medicine, St. Louis, MO 63110 **Use of cortical circuits during focal penicillin seizures: an autoradiographic study with (14C)deoxyglucose.** Brain Research (Amsterdam). 150(3):487-501, 1978.

Autoradiography with (14C)deoxyglucose was used to study the architectural pattern of glucose utilization in the motor cortex of rats during focal penicillin seizures. The seizure focus was characterized by a well circumscribed area whose metabolic activity was increased two to three times normal. This was tightly surrounded by cortex that was normal or slightly depressed. The posterior third of the focus showed an increase in glucose utilization in a columnar pattern with particular accentuation of activity in lamina V. There was a loss of normal activity in lamina IV within the focus and in somatosensory and occipital cortex far behind the focus. The intensity of focal seizures was increased by the intracortical injection of more penicillin or by giving intravenous metrazol. Both of these methods resulted in an increase in the size of the focus as determined with (14C)deoxyglucose. The architectural pattern of glucose utilization in the cortex during focal seizures is discussed with reference to corticocortical, commissural, and corticothalamic circuits that have been identified by others in anatomical studies. Superimposed on this structure are physiological principles of recurrent excitation, lateral spread, and surround inhibition that characterize basic electrophysiological mechanisms of epilepsy, and influence the intensity of activity within the architectural design. 39 references. (Author abstract modified)

000090 Colpaert, F. C. Dept. of Pharmacology, Janssen Pharmaceutica Research Labs., B-2340 Beerse, Belgium **Sensitization and desensitization to lateral hypothalamic stimulation.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 230(2):319-320, 1978.

The feasibility of studying the central action of psychoactive drugs in terms of their effects on functional thresholds for neural activity is demonstrated (specifically, sensitization and desensitization to lateral hypothalamic (LH) stimulation), and a method of pharmacological mapping of the brain is pointed out. Haloperidol was found to increase the detection threshold of LH stimulation in both rats tested. Cocaine decreased this threshold in both rats. In one rat, haloperidol blocked and cocaine mimicked the straining intensity of LH stimulation. It is concluded that an antipsychotic agent may increase, and a psychotic agent may decrease, this detection threshold in a neural system which is known to generate considerable stimulus control of behavior. 5 references.

000091 Commissiong, John W.; Galli, Corrado L.; Neff, Norton H. Laboratory of Preclinical Pharmacology, NIMH, St. Elizabeths Hospital, Washington, DC 20032 **Differentiation of dopaminergic and noradrenergic neurons in rat spinal cord.** Journal of Neurochemictry (Oxford). 30(5):1095-1099, 1978.

Norepinephrine (NE), dopamine (DA), and 3-methoxy-4-hydroxyphenylacetic acid (HVA) content were measured in different parts of rat spinal cord and cerebellum by a gas chromatographic/mass spectrometric method. In cerebellum, the ratio of NE to DA was 47, whereas in parts of the spinal cord this ratio varied between 11 and 19. After desipramine (25mg/kg) and 6-hydroxydopamine (6-OHDA, 100microg), there was a significant depletion of DA but not of NE in the cord. After benzotropine (25mg/kg) and 6-OHDA, there was significant depletion of NE but not of DA. Chlorpromazine (10mg/kg) or clozapine (25mg/kg) caused a significant increase in spinal cord HVA concentration 1 hour after treatment. Electrolytic lesion of the locus coeruleus resulted in a significant reduction of NE but not of DA. Spinal cord NE and DA were depleted by reserpine in a dose-dependent manner. Seven days after cord transsection at T10, spinal cord DA was significantly reduced in the lumbar region. These results suggest that dopaminergic neurons exist in rat spinal cord independently of noradrenergic neurons and that the DA is likely to be present in the terminals of descending axons. 37 references. (Author abstract modified)

000092 Corley K. C.; Mauck, H. P.; Shield, F. O'M. Medical College of Virginia, Richmond, VA 23173 **EKG and morphologic changes associated with environmental stress: effect of propranolol.** Psychophysiology. 15(3):274-275, 1978.

A summary is presented of a report on the effects of propranolol on stress-induced changes in monkeys, which was delivered to the 17th Annual Meeting of the Society for Psychophysiological Research, held in Philadelphia, October 1977. It was found that propranolol before (0.3mg-3.0kg) and during (0.5-0.9mg/kg/hr) a 24-hour session of Sidman avoidance blocked tachycardia, but at doses administered did not entirely prevent myocardial pathology. Since the minimal dose of propranolol to achieve beta blockade also affected avoidance behavior, the effectiveness of higher doses in prevention of cardiomyopathy induced by shock avoidance stress could not be determined. It is concluded that sympathetic autonomics play a role in these stress-induced phenomena, but that the possibility exists that

other factors may be involved in the observed myocardial pathology. (Author abstract modified)

000093 Costa, E.; Fratta, W.; Hong, J. S.; Moroni, F.; Yang, H.-Y. T. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Interactions between enkephalinergic and other neuronal systems.** Advances in Biochemical Psychopharmacology. 18:217-226, 1978.

A model of the interactions between dopaminergic and enkephalinergic neurons in the striatum was tested in rats. The model postulated two independent feedback loops regulating the nigrostriatal dopaminergic pathway and an efferent pathway involving two caudate pallidal pathways, one enkephalinergic and the other containing gamma-aminobutyric acid (GABA). Measurement of the steady state and turnover rate of putative neurotransmitters suggested that enkephalins are stored in neurons. The enkephalinergic system of the striatum and nucleus accumbens appeared to be modulated transsynaptically by dopamine synapses. Blockade of these synapses caused an accumulation of methionine-enkephalin, possibly corresponding to functional inhibition. Conversely, the GABA metabolism of the nucleus caudatus was inhibited transsynaptically by enkephalinergic synapses. Enkephalinergic synapses did not appear to modulate acetylcholine (ACh) metabolism in the caudate, but the ACh metabolism of nucleus accumbens was reduced by activation of enkephalinergic receptors. Evidence for selective interactions between enkephalin, GABA, and ACh neuronal systems in septal/ hippocampal/ strionigral, nucleus accumbens, and striatal systems suggests that enkephalin functions as a neurotransmitter interacting with postsynaptic receptors in membranes of septal, nucleus accumbens, and striatal neurons. 24 references.

000094 Costa, J. L.; Murphy, D. L.; Smith, M. A. Clinical Neuropharmacology Branch, NIMH, Bethesda, MD 20014 **Comparison of the X537A-induced ionophoric removal of serotonin and tryptamine from intact human platelets.** Research Communications in Chemical Pathology and Pharmacology. 22(1):27-36, 1978.

The nonexocytotic, X537A mediated release of 5-hydroxytryptamine (5HT) was compared with that of tryptamine sequestered in intact human platelets. In the absence of appreciable dense body release from platelets, the ionophore X537A caused rapid movement of 90-95% of vesicular tritiated 5HT into extracellular medium. X537A could also transport to the extracellular medium 20% of the total tryptamine sequestered in platelets. Studies of the extraction of aqueous 5HT and tryptamine into a chloroform phase, and the subsequent extraction of each of the two amines from a chloroform to an aqueous phase, suggest that 5HT is transported efficiently between aqueous phases through a nonpolar solvent, while tryptamine is not. The differences in the movement of the two amines through platelet membranes may be attributable to a similar phenomenon. 19 references. (Author abstract modified)

000095 Cox, B. M.; Baizman, E. R.; Su, Tsung-ping; Osman, Osman Hassan; Goldstein, Avram. Addiction Research Foundation, Stanford University Medical School, Palo Alto, CA 94304 **Further studies on the nature and functions of pituitary endorphins.** Advances in Biochemical Psychopharmacology. 18:183-189, 1978.

The nature and functions of pituitary endorphins were examined in male Sprague-Dawley rats. Approximately equal amounts of endorphin were found in the pars distalis and pars intermedia, with tissue endorphin concentrations 6-9 times higher in the pars intermedia. Negligible quantities of endorphin were found in the pars nervosa. Most of the opioid activity in the pituitary gland was attributable to beta-endorphin, although other related peptides may also be present. Although melanocyte stimulating hormone and endorphin in the pituitary gland may derive from a common peptide precursor, they did not appear to be processed, stored, or released by identical mechanisms. Chronic morphine treatment and subsequent naloxone precipitated withdrawal had no significant effect on pituitary endorphin content. 20 references.

000096 Craves, F. B.; Law, P. Y.; Hunt, C. A.; Loh, H. H. Department of Pharmacology, University of California Medical Center, San Francisco, CA 94143 **The metabolic disposition of radiolabeled enkephalins in vitro and in situ.** Journal of Pharmacology and Experimental Therapeutics. 206(2):492-506, 1978.

The metabolic disposition of radiolabled met-enkephalin and leu-enkephalin was investigated in vitro in male ICR mouse brain tissue and in vivo using an in situ perfused male Sprague-Dawley rat brain. Enkephalins were susceptible to rapid metabolism by brain tissues; the enzymatic activity was ubiquitous, but nonmenbranous fractions were most active. Examination of the metabolites indicated that the most rapid enzymatic attack in vitro is the tyr-gly bond. In contrast, in situ the initial enzymatic attack was at the gly-gly or gly-phe bond rather than at the terminal tyr-gly. Kinetic analysis of the perfused tritiated met-enkephalin demonstrated an apparent half life of 3.9minutes. This half life is inconsistent with the hypothesis that the absence of significant enkephalin antinociceptive activity is due to its rapid metabolism by intact brain tissue. Results indicate that it is unlikely that met-enkephalin serves a primary role as an endogenous analgesic peptide in the CNS. 47 references. (Author abstract modified)

000097 Creese, Ian; Prosser, Timothy; Snyder, Solomon H. Department of Pharmacology, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Dopamine receptor binding: specificity, localization and regulation by ions and guanyl nucleotides.** Life Sciences (Oxford). 23(5):495-499, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, a study of tritiated spiroperidol, apomorphine, and 2-amino-6,7-dihydroxy-1,2,3,4-tetrahydronaphthalene (ADTN) binding to dopamine (DA) receptors is described. Tritiated spiroperidol labeled DA receptors in rat striatum and serotonin receptors in frontal cortex and hippocampus. Tritiated ADTN and apomorphine labeled rat striatal DA receptors. Drug displacement and lesion studies suggested that in rat, 3H-apomorphine labels two distinct DA receptors, one associated with DA sensitive adenylate cyclase and the other with presynaptic DA receptors that are also labeled by 3H-spiroperidol. Whereas divalent cations increased specific DA receptor binding of tritiated DA agonists and antagonists, tritiated agonist binding was selectively decreased by some guanyl nucleotides. 18 references. (Author abstract modified)

000098 Crews, Fulton T.; Smith, Charles B. Department of Pharmacology, University of Michigan Medical School, Ann Arbor, MI 48109 **Presynaptic alpha-receptor subsensitivity after long-term antidepressant treatment.** Science. 202(4365):322-324, 1978.

Andrenergic nerve transmission was studied with strips of left atrial muscle isolated from Sprague-Dawley rats to explain the delayed clinical response to administration of tricyclic antidepressants. After 3 weeks of twice daily administration of desipramine to rats, the frequency response curve for field stimulation of adrenergic neurons in the atrial strips shifted to the left and the efflux of norepinephrine was enhanced greatly. After 1 day of treatment, only slight shifts in the frequency response curve and small increases in norepinephrine efflux occurred, al-

though inhibition of norepinephrine uptake was already maximal. Phenoxybenzamine caused a further shift to the left in the frequency response curve similar to that which occurred after 3 weeks of desipramine treatment alone. It is suggested that the delay in the onset of the clinical effect of the tricyclic antidepressants may be explained by the gradual decrease in sensitivity of the presynaptic alpha-receptor. 14 references. (Author abstract modified)

000099 Crowley, W. R.; O'Donohue, T. L.; Wachslicht, H.; Jacobowitz, D. M. Laboratory of Clinical Science, National Institute of Mental Health, National Institutes of Health, Bethesda, MD 20014 **Effects of estrogen and progesterone on plasma gonadotropins and on catecholamine levels and turnover in discrete brain regions of ovariectomized rats.** Brain Research (Amsterdam). 154(2):345-357, 1978.

A study was undertaken to assess the effects of estrogen and progesterone (PG) on catecholamine levels in hypothalamic nuclei of ovariectomized rats, and to determine whether ovarian hormones influence the depletion of catecholamines produced by alpha-methyltyrosine (a-MT). Treatment with estradiol benzoate (EB), which lowered plasma follicle-stimulating hormone (FSH) and leutinizing hormone (LH), reduced the depletion of norepinephrine (NE) produced by a-MT in the lateral septum, interstitial nucleus of the stria terminalis, and central gray catecholamine area, and reduced the depletion of dopamine (DA) in the nucleus of the tractus diagonalis. EB enhanced NE depletion in the periventricular and anterior hypothalamic nuclei, and raised steady state levels of NE in the medial amygdaloid nucleus. These effects were reversed by subsequent treatment with progesterone, which stimulated FSH and LH release. EB plus PG enhanced the a-MT induced depletion of NE over that observed with EB alone in the arcuate nucleus, and similarly enhanced DA depletion in the interstitial nucleus of the stria terminalis. EB plus PG prevented the depletion of NE by a-MT in the paraventricular and ventromedial nuclei, and also lowered resting NE levels in the paraventricular nucleus. The results suggest that catecholamine neurons in several discrete brain regions participate in the stimulatory and inhibitory feedback effects of ovarian hormones on gonadotropin secretion, and perhaps also on the hormonal induction of sexual receptivity. 59 references. (Author abstract modified)

000100 Curcio, M.; Catto, E.; Stramentinoli, G.; Algeri, S. Istituto di Richerche Farmacologiche "Mario Negri," Via Eritrea, I-62-20157 Milan, Italy **Effect of S-adenosyl-L-methionine on serotonin metabolism in rat brain.** Progress in Neuro-Psychopharmacology. 2(1):65-71, 1978.

The administration of S-adenosyl-L-methionine (SAMe) caused an increase in 5-hydroxytryptamine (5-HT) and 5-hydroxyindoleacetic acid (5-HIAA) levels in some regions of male Sprague-Dawley rat brain. The 5-HT turnover rate, determined by the steady state kinetic method, was higher in rats receiving repeated administrations of SAMe. SAMe also enhanced the increase in 5-HIAA induced by reserpine. The hypothesis that the effect of SAMe on the serotonergic pathway is secondary to an increase in brain melatonin is discussed. 16 references. (Author abstract)

000101 Dafny, N.; Rigor, B. M. Department of Neurobiology, University of Texas Medical School, Houston, TX 77025 **Dose effects of ketamine on photic and acoustic field potentials.** Neuropharmacology (Oxford). 17(10):851-862, 1978.

The effects of 10 incremental doses of ketamine (1-140mg/kg, ip) on photic and acoustic evoked responses were determined in five brain sites in freely moving male Sprague-Dawley rats. Permanent semimicroelectrodes were implanted stereotaxically in the inferior colliculus and lateral geniculate body, the primary relay sites for acoustic and photic input, respectively; three additional electrodes were placed in the mesencephalic reticular formation, the ventromedial hypothalamus, and the somatosensory cortex (SC). Following recovery from surgery, the averaged acoustic and photic field potentials following 32 repetitive stimuli were averaged as one set by minicomputer. Surgical anesthesia was induced by 80mg/kg ketamine. Differences in the number of ketamine induced changes in sensory field potentials were observed between photic and acoustic input; the acoustic evoked responses were more sensitive and exhibited dose dependent responses, particularly in the SC. Subanesthetic doses (less than 80mg/kg) of ketamine induced depression of responses, while higher doses (100-140mg/kg) induced increases in the response amplitudes, shifted the amplitude to the right (longer latency), and prolonged the duration of the responses. However, the responses from the sensory relay nuclei were affected by the initial dose of 1mg/kg and remained constant with increasing doses. 50 references. (Author abstract modified)

000102 Dairman, Wallace M.; Juhasz, Laszlo. Department of Toxicology, Research Division, Hoffman-La Roche Inc., Nutley, NJ 07110 **A study in mice of benzodiazepine-anticholinergic interaction: protection against restraint-immersion and forced exertion-induced gastric mucosal erosion.** Pharmacology (Basel). 17(2):104-112, 1978.

The effectiveness of benzodiazepines (diazepam and chlordiazepoxide hydrochloride) and anticholinergics (propantheline bromide and clidinium bromide) in preventing gastric mucosal erosion induced in male CD-1 and CF-1 mice by restraint/immersion and forced exertion was investigated. The administration of a benzodiazepine with an anticholinergic resulted in additive or supraadditive protective effects in both systems. Results are discussed in relation to the use of benzodiazepine/anticholinergic combinations in the treatment of human gastric and duodenal ulcer disease. 17 references. (Author abstract modified)

000103 Davidoff, Robert A.; Hackman, John C. Neurology Service (127), Veterans Administration Hospital, 1201 N. W. 16th Street, Miami, FL 33125 **Pentylenetetrazol and reflex activity of isolated frog spinal cord.** Neurology. 28(5):488-494, 1978.

The superfused in vitro Rana pipiens frog spinal cord preparation was used to investigate the effects of pentylenetetrazol (PTZ) on the spinal cord. PTZ depressed monosynaptic, but augmented polysynaptic reflexes, and decreased primary afferent depolarization. Concurrently, in Ringer's solution containing sufficient magnesium or cobalt ions to block synaptic transmission, PTZ antagonized the hyperpolarizing effects on motoneurons and the depolarizing effects on primary afferent fibers of the inhibitory amino acids gamma-aminobutyric acid (GABA), beta-alanine, taurine, and glycine. PTZ did not affect responses to the excitatory amino acids glutamic acid and aspartic acid. Furthermore, PTZ did not alter high affinity uptake by cord slices, K evoked release of (3H) GABA from them, or the spinal concentration of GABA. The data suggest that PTZ may produce its excitatory effects by postsynaptic blockage of inhibitory processes mediated by GABA and possibly by other amino acids. 48 references. (Author abstract)

000104 Delini-Stula, A.; Radeke, E.; Vassout, A. Research Dept., Pharmaceutical Division, CIBA-GEIGY A. G., Basel, Switzerland **Some aspects of the psychopharmacological activity of maprotiline (Ludiomil): effects of single and repeated treatments.** Journal of International Medical Research (Northampton). 6(6):421-429, 1978.

Three different aspects of the psychopharmacological activity of the antidepressant, maprotiline, were investigated: 1) its influence on serotonergic functions, 2) the effects produced by chronic treatment, and 3) its CNS depressant and anxiolytic properties. Study of the effects of maprotiline on 5-HTP induced head twitch in mice pretreated with pargyline or on hyperpryexia in rats provided no evidence that the drug interferes with serotonin mediated functions in the CNS. A chronic effect noted is the restoration of conditioned avoidance behavior after its suppression by pretreatment with reserpine. Maprotiline was found to potentiate CNS depressant effects of drugs like chlorpromazine, phenobarbitone, and propranolol which confirms previous indications of its sedative action. 25 references. (Author abstract modified)

000105 Della Bella, D.; Casacci, F.; Sassi, A. Zambon S.p.A. Research Laboratories, I-20091 Bresso-Milan, Italy **Opiate receptors: different ligand affinity in various brain regions.** Advances in Biochemical Psychopharmacology. 18:271-277, 1978.

The distribution of three types of opiate receptors (mu, kappa, and sigma) in the cortex, striatum, brainstem, and spinal cord was examined. Synaptosomal fractions from each area were exposed to tritiated methionine-enkephalin (ME) and to tritiated dihydromorphine (DHM). In displacing these labeled compounds, morphine was used to characterize the mu-receptors, ketocyclazocine to study kappa-receptors, and the benzomorphan derivative SKF-10047 to measure sigma-receptors. Morphine and SKF-10047 were most active in displacing ligand bound to brainstem and spinal cord preparations, suggesting that these areas are rich in mu-receptors and stigma-receptors. SKF-10047 showed greater displacement potency than morphine in striatal preparations, suggesting that the striatum contains a greater density of sigma-receptors. Kappa-receptor and mu-receptor agonists showed a relatively poor affinity to striatal opiate receptors. The kappa-receptor agonist ketocyclazocine displaced ME and DHM from cortical preparations better than SKF-10047 or morphine. Results indicate that the density of opiate receptor types differs in various brain areas. ME displacement from brain areas varied with the prototype agonist used, indicating that the pattern of ME displacement in different areas was not dependent on the abundance of specific peptidases or peptidase inhibitors. 7 references.

000106 Denef, Carl; Follebouckt, Jean-Jacques. Katholieke Universiteit Leuven, Fakulteit der Geneeskunde, Afdeling Farmakologie, B-3000 Leuven, Belgium **Differential effects of dopamine antagonists on prolactin secretion from cultured rat pituitary cells.** Life Sciences (Oxford). 23(5):431-435, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, the potency of a series of dopamine antagonists (pimozide, clopimozide, butyrophenones, haloperidol, domperidone, butaclamol, and sulpiride) in reversing apomorphine suppression of prolactin secretion from cultured female Wistar rat pituitary cells is described. All the drugs tested reversed the suppressive effect of apomorphine on prolactin secretion. The potency of these drugs closely paralleled their reported rank order in displacing in vitro 3H-haloperidol binding in rat striatum. Concentration/effect curves were parallel except those of pimozide and clopimozine, which were biphasic (prolactin secretion was stimulated at low concentrations but depressed at concentrations above 25nM). Pimozide and clopimozide were the only dopamine antagonists that depressed prolactin secretion directly, in the absence of apomorphine. Results suggest that prolactin secretion from cultured pituitary cells constitutes an in vitro test system suitable for differentiating antagnoists of dopamine receptors and possibly for distinguishing pure from partial antagonists. 20 references. (Author abstract modified)

000107 Deutsch, J. A.; Thiel, T. R.; Greenberg, L. H. Department of Psychology, University of California, San Diego, La Jolla, CA 92093 **Duodenal motility after cholecystokinin injection or satiety.** Behavioral Biology. 24(3):393-399, 1978.

Rats were implanted with a photocell on one side of the duodenum and a light emitting diode on the other to permit recordings of upper duodenal activity in the freely-moving animal when it had been injected with the terminal octapeptide of cholecystokinin or saline as it fed to satiety. While cholecystokinin reduced intake by over 50%, the amplitude of duodenal activity after cholecystokinin injection was grossly attenuated as compared with activity after normal satiation. It is suggested that food intake reduction after cholecystokinin injection may therefore be due to this abnormality rather than to normal satiety. 14 references. (Author abstract modified)

000108 Di Chiara, Gaetano; Porceddu, Maria Luisa; Vargiu, Lidia; Gessa, Gian Luigi. Institute of Pharmacology, University of Cagliari, Via Porcell 4, I-09100 Cagliari, Italy **Stimulation of 'regulatory' dopamine receptors by bromocriptine (CB-154).** Pharmacology (Basel). 16(Suppl. 1):135-142, 1978.

The stimulation of regulatory dopamine receptors by bromocriptine (CB-154) was investigated in mice. Bromocriptine produced long-lasting hypomotility and decreased brain dihydroxyphenylacetic acid (DOPAC). These effects were obtained with doses much lower than those which produced hypermotility. The decrease of brain DOPAC was correlated to the hypomotility both on a dose and on a time basis. Potent DA receptor blockers such as pimozide, benzperidol, and droperidol antagonized the hypomotility and the decrease of brain DOPAC produced by bromocriptine. These effects were obtained with low doses (0.05-0.3mg/kg) of neuroleptics which per se do not affect motility or brain DOPAC. The maximal decrease of brain DOPAC produced by bromocriptine was similar to that produced by apomorphine, and the combination of these drugs did not result in a further decrease. It is postulated that bromocriptine decreases DA turnover and produces hypomotility by acting on regulatory DA receptors different from the postsynaptic ones of the terminal dopaminergic areas. 27 references. (Author abstract modified)

000109 Diamond, Bruce I.; Borison, Richard L. Anesthesiology Dept., (Basel) Mount Sinai Hospital, Chicago, IL **A new putative neuroregulator of the extrapyramidal system.** Pharmacology. 17(4):210-214, 1978.

The ability of 2-phenylethylamine, a putative neurotransmitter, to reverse reserpine induced parkinsonism in animals and elicit stereotypy is examined. This action is only partially antagonized after catecholamine depletion by pretreatment with alpha-methyl-para-tyrosine, and fully blocked by pretreatment with haloperidol, a dopamine receptor blocker. Results indicate that via direct and/or indirect actions, 2-phenylethylamine may serve a neuroregulatory role in the extrapyramidal system. 22 references. (Author abstract modified)

000110 Dick, Evan; Miller, Robert F. Department of Physiology, State University of New York, Buffalo, NY 14214 **Light-evoked potassium activity in mudpuppy retina: its relationship to the b-wave of the electroretinogram.** Brain Research (Amsterdam). 154(2):388-394, 1978.

The light evoked modulation of potassium in the perfused mudpuppy retina eyecup preparation was studied while applying pharmacological agents known to have selective effects on different populations of retinal neurons. These pharmacological

agents included ethanol, gamma-aminobutyric acid, glycine and alpha-aminopimelic acid. Results indicate that, in the vertebrate retina, there are two sources of light evoked increases in potassium. One is located proximally, with pharmacological properties, indicating that it is largely postbipolar in origin. The other is in the distal retina, with pharmacological properties, indicating that it is postreceptor in origin and is probably a reflection of depolarizing bipolar cell (DPBC) activity. The distal potassium increase was found to bear a close relationship to the b-wave of the electroretinogram. It is proposed that the distal potassium increase generates, through Muller cell depolarization, the b-wave of the electroretinogram, which thus represents a second order signal of the DPBC. 24 references.

000111 Donlon, John; Kaufman, Seymour. Laboratory of Neurochemistry, NIMH, Bethesda, MD 20014 **Glucagon stimulation of rat hepatic phenylalanine hydroxylase through phosphorylation in vivo. (Unpublished paper)** Bethesda, MD, NIMH, 1978. 20 p.

Findings which show that the extent of phosphorylation of phenylalanine hydroxylase can be increased in vivo in response to administered glucagon are presented. The data indicate that glucagon, and perhaps other agents or physiological conditions that result in altered cyclic adenosine 3',5'-monophosphate (AMP) and/or protein kinase levels, can regulate phenylalanine hydroxylase activity. Furthermore, the results can account for the earlier observation that there is decreased phenylalanine and increased tyrosine output induced by glucagon in the perfused rat liver. Incorporation of radioactive inorganic phosphate into phenylalanine hydroxylase following administration of glucagon was determined after specific immunoprecipitation of the enzyme from partially purified preparations. Sodium dodecyl sulfate disc gel electrophoresis showed that stimulation of enzyme activity is accompanied by incorporation of 32Pi into the protein to the extent of 0.7M/M of hydroxylase subunit. These results demonstrate the phosphorylation of hepatic phenylalanine hydroxylase in vivo and strongly support the idea that the activity of this enzyme can be hormonally regulated through a phosphorylation mechanism. 26 references. (Author abstract modified)

000112 Dorsa, Daniel M.; Connors, Matthew H. Department of Pediatrics, University of California, Davis CA 95616 **Serotoninergic control of growth hormone (GH) secretion in dogs as measured by dose responsiveness.** Life Sciences. 22(19):1391-1398, 1978.

A sensitive radioimmunoassay for measurement of canine growth hormone (GH) was developed, and the serotoninergic control of GH secretion with increasing doses of L-5-hydroxytryptophan (5-HTP) was studied in mongrel bitches. Intravenous administration of 1, 5, 10, and 25mg/kg doses of 5-HPT caused GH release, but an increased latency in peak GH response was seen with the larger doses. Doses of 10 and 25mg/kg induced stressful behavior and markedly increased plasma corticoid levels, while lower doses were without effect. It is concluded that the GH response to low-dose 5-HPT is not due to stress, and that alternate mechanisms are needed to explain the variable serotoninergic control of GH release demonstrated with low-dose and high-dose 5-HPT stimulation. 17 references. (Author abstract modified)

000113 dRobinson, S. E.; Cheney, D. L.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Effect of nomifensine and other antidepressant drugs on acetylcholine turnover in various regions of rat brain.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(3):263-269, 1978.

The effects of the antidepressant nomifensine on acetylcholine (ACh) content and turnover (TR/ACh) in various regions of male Sprague-Dawley rat brain were compared to those of amphetamine, apomorphine, amitriptyline, chlorimipramine, desipramine, and iprindole. Intraperitoneal injection of nomifensine (14, 28, and 71mcmol/kg) and amphetamine (27mcmol/kg) increased TR/ACh in the cortex, hippocampus, and diencephalon, but failed to change ACh content. Subcutaneous injection of apomorphine (2.4and 4.8mcmol/kg) failed to change TR/ACh or the ACh content in the cortex or diencephalon, but decreased TR/ACh in the hippocampus. Phenoxybenzamine (15nmole) injected intraseptally failed to change hippocampal TR/ACh but blocked the nomifensine and amphetamine induced increase of TR/ACh in cortex and hippocampus. Results indicate that the nomifensine and amphetamine induced increase of TR/ACh in the cortex and perhaps in the hippocampus is due to noradrenergic activation of cholinergic neurons. The increase in TR/ACh caused by nomifensine is probably not related to its antidepressant action, since none of the tricyclic antidepressants affected ACh content of or TR/ACh in the brain regions examined, with the exception of amitriptyline, which decreased ACh content in the cortex and striatum. 37 references. (Author abstract modified)

000114 Dunlap, Janis L.; Gerall, Arnold A.; Carlton, Sharon F. Psycghology Department, Tulane University, New Orleans, LA 70118 **Evaluation of prenatal androgen and an ovarian secretions on receptivity in female and male rats.** Journal of Comparative and Physiological Psychology. 92(2):280-288, 1978.

The contribution of prenatal androgen and postnatal ovarian secretions to the development of female receptivity behaviors in male and female rats was investigated. Particular emphasis was placed on differences associated with age at which receptivity was induced. Offspring of rats injected daily from day 16 through day 20 of gestation with either two milligrams of testosterone propionate (TP) in sesame oil or oil alone were tested for sexual receptivity following injections or estradiol benzoate and progesterone beginning at 40, 80, 120 days of age. At each age, neonatally gonadectomized males and females from TP injected litters exhibited less receptivity than corresponding oil-injected controls. Prenatally androgenized females were similar to neonatally castrated oil-injected males at all ages. Ovarian implants from birth to 35 days of age significantly increased receptivity in neonatally castrated males and androgenized females. It is concluded that increasing the age at which testing was initiated systematically reduced receptivity in all groups. 21 references. (Author abstract modified)

000115 Dunn, Adrian J.; Rees, Howard D.; Iuvone, P. Michael. Department of Neuroscience, University of Florida, College of Medicine, Gainesville FL 32610 **ACTH and the stress-induced changes of lysine incorporation into brain and liver proteins.** Pharmacology Biochemistry and Behavior. 8(4):455-465, 1978.

The role of adrenocorticotropic hormone (ACTH) in the stress-induced changes of lysine incorporation into brain and liver proteins was investigated. When mice were subjected to footshock and subsequently injected with tritiated lysine, the cerebral uptake of lysine, its incorporation into brain protein, and the relative radioactivity (RR: protein radioactivity divided by amino acid radioactivity) were all increased. In the liver, stressed mice showed decreased free lysine radioactivity and increased protein radioactivity and RR compared to quiet mice. The injection of saline had no effect in the brain but partially mimicked the footshock responses in the liver. Injections of ACTH 1-24 (Cosyntropin) mimicked the effects of footshock in the brain, and further augmented the saline-induced effect on the RR in the liver. ACTH 4-10 (OI63) increased the RR of

brain protein, but produced no significant change in brain free lysine radioactivity or in any measure in the liver. Pretreatment of mice with the synthetic glucocorticoid, dexamethasone, did not enhance these effects and diminished the effect of ACTH 4-10 in the brain. ACTH treatment did not alter the profiles of brain polyribosomes. Lysine vasopressin, which is also released during stress, did not alter the incorporation of lysine into brain or liver protein, except at high doses when it decreased plasma radioactivity. The results suggest that secretion of ACTH at least partially mediates the stress-induced changes of lysine incorporation into brain and liver proteins, but that it is probably not the only factor involved. 40 references. (Author abstract)

000116 Duvoisin, Roger C.; Mytilineou, Catherine. Department of Neurology, Mount Sinai School of Medicine, New York, NY 10029 **Where is L-DOPA decarboxylated in the striatum after 6-hydroxydopamine nigrotomy?** Brain Research (Amsterdam). 152(2):369-373, 1978.

The action of the peripheral decarboxylase inhibiter alpha methyldopa hydrazine (AMDH) in the rotating nigral-lesioned rat was studied with reference to the possibility that the capillary endothelium of the brain contributes to the behavioral effect of L-dopa. Female Sprague-Dawley rats were subjected to a stereotaxic microinjection of 6-hydroxydopamine into the rostromedial portion of the left substantia nigra, and dopamine receptors were then given 3 months to develop. It appears that the decarboxylase activity of the capillary endothelium does not contribute to the behavioral effect of L-dopa in these animals. The disappearance of the capillary fluorescence and the appearance of a diffuse green fluorescence in the brain parenchyma suggests that inhibition of the capillary decarboxylase by AMDH removes an enzymatic barrier to the penetration of L-dopa through the capillary walls into the brain. Whether L-dopa is metabolized to dopamine in striatal serotonergic nerve terminals remains to be demonstrated in vivo. Further study of the possible role of serotonergic neuronal systems in the rotating rat model of parkinsonism is suggested. 13 references.

000117 Edvinsson, Lars; Lindvall, Maria. Department of Histology, Bistopsgatan 5, S-223 62 Lund, Sweden **Autonomic vascular innervation and vasomotor reactivity in the choroid plexus.** Experimental Neurology. 62(2):394-404, 1978.

The bovine choroidal arterial supply was examined with regard to autonomic innervation and vasomotor receptors. The vessels received a well developed network of adrenergic and cholinergic nerve fibers. A weak contractile effect was obtained in vitro by epinephrine, norepinephrine, phenylephrine, and isoproterenol, in descending order of potency. Together with the typical inhibition of the response by phentolamine, this finding indicated the presence of contractile alpha-adrenergic receptors. Histamine, prostaglandin F2alpha, and saturated potassium chloride all produced strong contractions of the arteries. Dilator responses could be recorded when the choroidal arteries were contracted by prostaglandin and contractile effects of the test agents were blocked by phenoxybenzamine. The relative potencies of the sympathomimetic agents was isoproterenol, norepinephrine, epinephrine, and terbutaline, in descending order. The dilator effect was inhibited by propranolol, indicating the presence of dilator beta-adrenergic receptors. Relaxation was also obtained with adenosine and cyclic adenosine monophosphate. 30 references. (Author abstract modified)

000118 Edwards, David J. Department of Psychiatry, Western Psychiatric Institute and Clinic, University of Pittsburgh School of Medicine, Pittsburgh, PA 15261 **Phenylethanolamine is a specific substrate for type B monoamine oxidase.** Life Sciences. 23(11):1201-1208, 1978.

The characteristics of phenylethanolamine (PEOH) as a competitive inhibitor of and substrate for monoamine oxidase (MAO) were studied in male Sprague-Dawley rat brain and liver homogenates. Although high concentrations (1mM) of PEOH produced only minimal inhibition of MAO when serotonin (a type A MAO substrate) was used, PEOH was a potent competitive inhibitor (inhibitory constant value, 11microM) of the deamination of phenylethylamine (a type B MAO substrate). When PEOH was used as a substrate, deprenyl (a selective inhibitor of type B MAO) produced a single sigmoid inhibition curve at low concentrations of the inhibitor. These results indicate that PEOH is a specific substrate for type B MAO. Identification of the products formed under the assay conditions show that PEOH is converted to both mandelic acid and phenylethylene glycol by liver homogenates but only to the latter, neutral metabolite by brain homogenates. 15 references. (Author abstract modified)

000119 Ellison, Gaylord; Eison, Michael S.; Huberman, Harris S.; Daniel, Frank. Department of Psychology, University of California, Los Angeles, CA 90024 **Long-term changes in dopaminergic innervation of caudate nucleus after continuous amphetamine administration.** Science. 201(4352):276-278, 1978.

Silicone pellets containing a d-amphetamine base were implanted subcutaneously in rats to investigate the effects of continuous amphetamine administration on changes in the dopaminergic innervation of the caudate nucleus. These pellets release amphetamine for at least 10 days. It was found that several days after implantation, swollen dopamine axons concomitant with large decreases in tyrosine hydroxylase activity were observed in the caudate nucleus. Results also show that decreased tyrosine hydroxylase activity was still present 110 days after pellet removal in the caudate but not in several other brain regions, nor in the caudate of rats injected with an equivalent amount of amphetamine in daily injections. It is concluded that the results imply that continuous amphetamine administration has a selective neurotoxic effect on dopamine terminals in the caudate. 20 references. (Author abstract)

000120 Fennessy, M. R.; Taylor, D. A. Department of Pharmacology, University of Melbourne, Parkville, Victoria, 3052, Australia **Antagonism of the effects on thermoregulation of delta9-tetrahydrocannabinol by clomipramine in the rat.** British Journal of Pharmacology (London). 63(2):267-273, 1978.

The effect of pretreatment with clomipramine hydrochloride (15mg/kg) on changes in body temperature and brain amines induced by (-)-trans-delta9-tetrahydrocannabinol (THC) were investigated in male Wistar rats. A dose of 0.05mg/kg THC produced hyperthermia and a decrease in whole brain concentrations of 5-hydroxyindoleacetic acid (5-HIAA). Doses of 2 and 5mg/kg produced hyperthermia and increases in brain 5-HIAA, whereas 0.5mg/kg did not affect either parameter. None of these doses of THC affected the whole brain concentrations of dopamine, noradrenaline, or 5-hydroxytryptamine. Clomipramine modified the responses to THC, in that the dose response curves appeared to be shifted to the right. It is concluded that clomipramine acts as an antagonist to these actions of THC by interfering with entry of THC into tryptaminergic neurons. 18 references. (Author abstract)

000121 Fortes, Z. B.; Scivoletto, R.; Reis, C. C. A. Department of Physiology and Pharmacology, Institute of Biomedical Sciences, University of Sao Paulo, Sao Paulo, Brazil **Anticholinesterase activity of some butyrophenones.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 234(1):58-63, 1978.

The anticholinesterase activity of haloperidol, droperidol, and trifluperidol was studied, using dog plasma as a cholinesterase source. Changes in arterial blood pressure elicited by a mixture of acetylcholine (Ach) and dog plasma with or without these drugs were used as an indicator of anticholinesterase activity. When the butyrophenones were present in concentrations of 0.5-0.0005M in plasma containing Ach, the hypotensive effect of Ach was preserved. These findings indicate that the butyrophenones may exert anticolinesterase activity. 23 references. (Author abstract modified)

000122 Franz, Jonathan R.; Hull, Elaine M.; Snyder, Abigail M.; Roth, Jerome A. Department of Psychology, SUNY at Buffalo, Amherst, NY 14226 **The effect of maternal progesterone on brain monoamine oxidase activity of neonatal rats.** Brain Research (Amsterdam). 158(2):397-406, 1978.

Monoamine oxidase (MAO) activity was measured in Long-Evans rats exposed to progesterone prenatally, postnatally, or during both periods. Postnatal progesterone elevated type A and type B MAO activity in the brains of pups of both sexes by day 7. Deamination of 5-hydroxytryptamine and phenylethylamine was highest in animals receiving both prenatal and postnatal progesterone. No sex differences in MAO activity were observed in control or progesterone treated pups. Progesterone levels in blood plasma of 7-day-old animals were significantly higher in animals receiving postnatal progesterone. Results indicate that progesterone elevates brain MAO activity in vivo and that progesterone administered to a lactating female elevates MAO activity in suckling young. 28 references. (Author abstract modified)

000123 Frazer, Alan; Hess, Marilyn E.; Mendels, Joe; Gable, Bradley; Kunkel, Ellen; Bender, Allison. Department of Pharmacology, University of Pennsylvania School of Medicine, Philadelphia, PA 19104 **Influence of acute and chronic treatment with desmethylimipramine on catecholamine effects in the rat.** Journal of Pharmacology and Experimental Therapeutics. 206(2):311-319, 1978.

The effects of acute and chronic administration of desmethylimipramine (DMI) on the biochemical actions of catecholamines in male Sprague-Dawley rat brain, heart, and diaphragm were studied. Single intraperitoneal injections of DMI (10mg/kg) did not affect basal synthesis of cyclic tritiated adenosine monophosphate (3H-AMP) or the norepinephrine induced elevation of the nucleotide in rat brain slices. In contrast, administration of DMI (10mg/kg, twice daily) for 7 or 10 days reduced the synthesis of either cyclic 3H-AMP or endogenous cyclic AMP stimulated by norepinephrine in rat brain slices. Acute treatment with DMI did not alter the increase in cardiac phosphorylase -A caused by isoproterenol, but chronic DMI reduced the drug activation of the enzyme. Results suggest that decreased biochemical response to catecholamines in rat brain may be due to the development of adrenergic receptor subsensitivity caused by chronic injections of DMI. The diminished phosphorylase -A activation seen in heart with chronic DMI may be due to a different mechanism. 43 references. (Author abstract modified)

000124 Frederickson, Robert C. A.; Burgis, V.; Harrell, C. E.; Edwards, J. D. Lilly Research Laboratoris, Eli Lilly and Company, Indianapolis, IN 46206 **Dual actions of substance P on nociception: possible role of endogenous opioids.** Science. 199(4335):1359-1362, 1978.

Studies were undertaken to examine further the analgesic activities of the undecapeptoid substance-P in mice. Substance-P when administered in very small doses (1.25 to 5n per mouse) by the intraventricular route produced analgesia which could be blocked by naloxone. At higher doses (greater than 50 n) this activity was lost. At these higher doses, however, substance-P produced hyperalgesia when combined with naloxone and analgesia when combined with baclofen (beta-(4-chlorophenyl)-gamma-aminobutyric acid). Findings suggest that substance-P may have dual actions in brain, releasing endorphins at very low doses and directly exciting neuronal activity in nociceptive pathways at higher doses. Data are compatible with the possibility that substance-P and the enkephalins play dual opposing roles in regulating neuronal activity in nociceptive pathways, and that there may be more than one receptor type for substance-P. 23 references. (Author abstract modified)

000125 Friend, W. C.; Brown, G. M.; Kirpalani, S.; Wilson, D. Dept. of Physiology, University of Toronto, Toronto, Ontario, Canada **Hypothalamic catecholaminergic effects on prolactin release in vitro.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(2):304-309, 1978.

The effects on prolactin release of norepinephrine (NE) and dopamine, and their immediate precursors, L-dihydroxyphenylalanine (L-dopa) and DL-threodihydroxyphenylserine (threodops), were studied in the pituitary, hypothalamus, and cortex tissues from female rats. Both dopamine and NE caused long lasting inhibition of prolactin release from either an isolated hemipituitary of a hemipituitary coincubated with a hypothalamus. Epinephrine also inhibited prolactin release. L-dopa inhibited prolactin release from pituitaries in the presence of a hypothalamus, but not in isolated pituitaries. Threodops, serotonin, 5-hydroxy-L-tryptophan, tyramine, octopamine, synephrine, thyrotropin releasing hormone, luteinizing hormone releasing hormone, and somatostatin, all failed to alter prolactin release. Results confirm that dopamine and NE directly inhibit prolactin release from the pituitary, and suggest that the hypothalamic mechanism inhibiting prolactin involves dopamine but not NE. 26 references. (Author abstract modified)

000126 Fuenmayor-T., L. A.R.C Institute of Animal Physiology, Babraham, Cambridge CB2 4AT, England **Effect of a reduction in brain 5-hydroxytryptamine on the concentration of homovanillic acid into the rat caudate nucleus.** British Journal of Pharmacology (London). 63(2):391, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society, in Guildford, England, the effects of p-chlorophenylalanine (PCPA) on the concentration of homovanillic acid (HVA) in the rat caudate nucleus were reported. PCPA reduced the concentration of 5-hydroxytryptamine (5-HT) by 84% and the concentration of HVA by 26.3%, with no modification of the dopamine (DA) concentration. PCPA also antagonized the accumulation of HVA normally seen after probenecid administration. Results suggest that the lack of brain 5-HT reduces the turnover of DA in the caudate nucleus. 5 references. (Author abstract modified)

000127 Fuller, R. W.; Roush, B. W. Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN 46206 **Effect of p-chloroamphetamine on the inactivation of monoamine oxidase in rat brain by 3-amino-2-oxazolidinone, 2-hydroxyethylhydrazine and phenylisopropylhydrazine.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 232(1):134-140, 1978.

In male Wistar rats, p-chloroamphetamine (PCA) protected against the irreversible inactivation of monoamine oxidase (MAO) in brain and liver by 3-amino-2-oxazolidinone, an agent that produced MAO inhibition through conversion to an active metabolite. In contrast, PCA did not protect against the inactivation of MAO by 2-hydroxyethylhydrazine or by phenylisopropylhydrazine. The effect on 3-amino-2-oxazolidinone may have been due to interference with its metabolism

rather than to occupancy of active sites on MAO by PCA. Implications of these findings for the use of 3-amino-2-oxazolidinone in evaluating reversible MAO inhibitors are discussed. 9 references. (Author abstract modified)

000128 Fuller, R. W.; Snoddy, H. D.; Perry, K. W.; Bymaster, F. P.; Wong, D. T. Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN 46206 **Studies on 4-(p-bromophenyl)-bicyclo (2,2,2) octan-1-amine as an inhibitor of uptake into serotonin neurones.** Neuropharmacology (Oxford). 17(10):815-818, 1978.

The p-bromo analogue of 4-phenyl-bicyclo(2,2,2)octan-1-amine was a potent antagonist of p-chloroamphetamine induced depletion of brain serotonin and a weaker antagonist of 6-hydroxydopamine induced depletion of heart norepinephrine in male Wistar rats and Cox Standard Strain mice. In both species, 4-(p-bromophenyl)-bicyclo(2,2,2)octan-1-amine was more active in antagonizing serotonin depletion and less active in antagonizing norepinephrine depletion than was the parent compound (without the p-bromo substituent). In vitro, the bromo analogue was markedly less active than the parent compound in blocking norepinephrine uptake by rat brain synaptosomes and was slightly less active in blocking serotonin uptake. Brain levels of the p-bromo compound were higher than those of the parent compound in rats, apparently accounting for the relatively greater effectiveness of the p-bromo compound in blocking serotonin depletion in vivo. Results indicate that 4-(p-bromophenyl)-bicyclo(2,2,2)octan-1-amine is a potent and relatively selective inhibitor of uptake into serotonin neurons. 17 references. (Author abstract modified)

000129 Fuller, Ray W.; Perry, Kenneth W.; Hemrick, Susan K. Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN 46202 **Inhibition of rat brain norepinephrine N-methyltransferase by 7,8-dichloro-2,3,4,5-tetrahydro-1H-2-benzazepine.** Brain Research (Amsterdam). 158(1):240-244, 1978.

One hour after injection of 7,8-dichloro-2,3,4,5-tetrahy dro-1H-2-benzazepine hydrochloride (DTB, 20mg/kg i.p.)in male Wistar rats, brainstem norepinephrine N-methyltransferase activity was decreased by 74%. The concentration of epinephrine in brain was significantly decreased 2, 4, and 6 hours after the injection of DTB and returned to normal by 8 hours. The half-life of DTB in brain was estimated to be 2-3 hours. Relatively few gross behavioral effects were found at the dose used, although 100mg/kg DTB has previously been found to cause tremors, mydriasis, and increased motor activity. The ability of DTB to inhibit epinephrine formation in rat brain in vivo at doses that do not cause gross disruption of animal behavior suggest that DTB is a useful agent for studying the functional roles of brain epinephrine neurons. 12 references.

000130 Fuller, Ray W.; Snoddy, Harold D.; Mason, Norman R.; Molloy, Bryan B. Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN 46206 **Effects of 1-(m-trifluoromethylphenyl)-piperazine on 3H-serotonin binding to membranes from rat brain in vitro and on serotonin turnover in rat brain in vivo.** European Journal of Pharmacology (Amsterdam). 52(1):11-16, 1978.

A new compound, 1-(m-trifluoromethylphenyl)-piperazine, inhibited the specific binding of tritiated serotonin to membranes from male Wistar rat brain in vitro at lower concentrations than did quipazine or 6-chloro-2-(1-piperazinyl)-pyrazine. In rats, 1-(m-trifluoromethylphenyl)-piperazine decreased the concentration of 5-hydroxyindoleacetic acid (5-HIAA) without altering the concentration of serotonin in whole brain. The decrease in 5-HIAA was apparently due to a decrease in serotonin turnover, since 1-(m-trifluoromethylphenyl)-piperazine caused a slower decline in serotonin concentration after synthesis inhibition with alpha-propyldopacetamide and a slower accumulation of 5-HIAA after probenecid injection to block its efflux from the brain. Results are compatible with the idea that 1-(m-trifluoromethylphenyl)-piperazine acts as a serotonin receptor agonist in rat brain. 16 references. (Author abstract modified)

000131 Fuxe, K.; Fredholm, B. B.; Agnati, L. F.; Ogren, S.-O.; Everitt, B. J.; Jonsson, G.; Gustafsson, J.-A. Department of Histology, Karolinska Institutet, S-104 01 Stockholm 60, Sweden **Interaction of ergot drugs with central monoamine systems. Evidence for a high potential in the treatment of mental and neurological disorders.** Pharmacology (Basel). 16(Suppl. 1):99-134, 1978.

Behavioral and biochemical experiments with rats to determine the effects of ergot drugs on central monoamine systems are reported. Results suggest that many ergot drugs possess dopamine (DA) agonistic activity at the postsynaptic DA receptors. It is suggested that this action of bromocriptine and lergotrile explains their unique antiparkinsonian properties. Studies on DA sensitive adenylate cyclase revealed only 10-30% increases of adenylate cyclase activity in striatum. With low concentrations of ergot drugs a positive interaction was found with DA at the level of the adenylate cyclase. Of all the ergots tested for DA agonistic activity, agroclavine and elymoclavine were found to be the most potent. The ergoline derivative CF 25-397 did not seem to possess antiparkinsonian activity, and did not produce stereotyped behavior. In the lower dose range several ergot drugs seemed to preferentially activate DA receptors other than the postsynaptic DA receptors in the forebrain. Some ergot drugs such as methergoline possessed preferential effects on 5-HT receptors. 57 references. (Author abstract modified)

000132 Gallager, Dorothy W.; Bunney, William E., Jr. Biological Psychiatry Branch, National Institute of Mental Health, Bethesda, MD 20014 **Effects of chronic lithium administration on the development of supersensitivity in CNS amine systems: a microiontophoretic study. (Unpublished paper)** Bethesda, MD, NIMH, 1978. 3 p.

A supersensitive response of the activity of dopamine (DA) containing cells in the zona compacta of the substantia nigra to microiontophoretically applied DA and to intravenously administered apomorphine was produced by chronic haloperidol treatment in rats. Animals treated concurrently with lithium and haloperidol failed to develop this presynaptic DA supersensitivity. Lithium's ability to block the development of supersensitivity in the DA system may not be generalized to other amine systems since chronic lithium treatment did not prevent the development of supersensitivity to 5HT in hippocampal pyramidal cells following chronic tricyclic antidepressant administration. 16 references. (Author abstract)

000133 Gambetti, Pierluigi; Ingoglia, Nicholas A.; Autilio-Gambetti, Lucilla; Weis, Peddrick. Division of Neuropathology, Institute of Pathology, Case Western Reserve University, Cleveland, OH 44106 **Distribution of (3H)RNA in goldfish optic tectum following intraocular or intracranial injection of (3H)uridine. Evidence of axonal migration of RNA in regenerating optic fibers.** Brain Research (Amsterdam). 154(2):285-300, 1978.

The distribution of radiolabeled ribonucleic acid (3H)RNA in the goldfish optic tectum following either intraocular or intracranial injection of (3H)uridine during optic fiber regeneration was studied. All fish were sacrificed 24 days after crushing the optic nerves (6 or 2 days after injection of (3H)uridine), at a time when regenerating optic fibers had entered the tectum and were establishing functional reconnections. Following intraocular injection, virtually all the (3H)RNA was located in the

layers of the left optic tectum, contralateral to the side of the injection, while virtually no radioactivity was present in the right optic tectum. In intracranially-injected fish, either 2 or 6 days after injection, silver grains were clustered over leptomeninges as well as vessels and parenchymal cells of the tectal strata containing the regenerating optic fibers. In the stratum opticum, a high grain density was seen over glial cells but not over the fascicles of regenerating axons. The results suggest that following the intraocular injection of (3H)uridine, the (3H)RNA present inside regenerating optic axons is transported from the ganglion cells of the retina; on the other hand, the (3H)RNA present in surrounding glial cells is the result of local utilization of (3H)RNA precursors which also migrate from the retina. Following intracranial injection of (3H)uridine, no substantial transfer of (3H)RNA from glial cells to regenerating optic fibers occurs in the goldfish optic tectum. 33 references. (Author abstract modified)

000134 Ganguly, D. K.; Nath, D. N.; Ross, H.-G.; Vedasiromoni, J. R. Division of Pharmacology, Indian Institute of Experimental Medicine, 4, Raja S. C. Mullick Road, Calcutta-700032, India **Rat isolated phrenic nerve-diaphragm preparation for pharmacological study of muscle spindle afferent activity: effect of oxotremorine.** British Journal of Pharmacology (London). 64(1):47-52, 1978.

Muscle spindle afferent discharges exhibiting an approximately linear length/frequency relation were recorded from the phrenic nerve in the isolated phrenic nerve/diaphragm preparation of the rat. Cholinergic influence on spontaneous and stretch induced afferent discharges was indicated by the augmentation produced by physostigmine and acetylcholine; this augmentation was prevented by d-tubocurarine but not by atropine, indicating the presence of curariform cholinoceptors in muscle spindles. Acetylcholine did not appear to be involved in the genesis of spindle afferent discharges, as incubation with hemicholinium-3 and d-tubocurarine failed to affect the rate of spontaneous and stretch induced spindle discharges. Oxotremorine markedly increased the rate of spontaneous and stretch induced spindle afferent discharges, and this effect was prevented in the presence of hemicholinium-3 and d-tubocurarine. The oxotremorine effects are discussed in relation to the hyperactive muscle spindle afferents observed in Parkinsonian patients. 19 references. (Author abstract modified)

000135 Garbarg, M.; Barbin, G.; Palacios, J. M.; Schwartz, J. C. Unite 109 de Neurobiologie, Centre Paul Broca de l'INSERM, 2ter, rue d'Alesia, F-75014, Paris, France **Effects of kainic acid on histaminergic systems in guinea-pig hippocampus.** Brain Research (Amsterdam). 150(3):638-641, 1978.

In a study of histaminergic systems in Hartley guinea-pig hippocampus, the selective neurotoxicity of kainic acid was employed to localize histidine decarbosylase (HD), the specific synthesizing enzyme, histamine-N-methyltransferase (HMT), the main catabolizing enzyme, and the cyclic AMP (cAMP) generating system stimulated by histamine (HA). The observed significant decrease in glutamic acid decarboxylase (GAD) activity, a selective marker of GABAergic neurons, confirms the neurotoxicity of kainic acid towards perikarya in hippocampus. The absence of significant decrease in HD activity indicates that the enzyme activity is held within extrinsic neurons ending in the hippocampus. HMT activity remained unaffected, suggesting that neurons intrinsic to the hippocampus or ascending through the medial forebrain bundle do not constitute a major source for this enzyme. The total disappearance of the HA induced cAMP accumulation in slices from the injected hippocampus indicates that target cells to the amine are neurons rather than glial cells. 25 references.

000136 Garcia de Yebenes Prous, J.; Carlsson, A.; Mena Gomez, M. A. Department of Pharmacology, University of Goteborg, Sweden **The effect of taurine on motor behavior, body temperature and monoamine metabolism in rat brain.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(2):95-99, 1978.

The effects of intracerebroventricularly (icv) or systemically injected taurine on monoamine synthesis and turnover in brain, motor activity, and body temperature were examined in male Sprague-Dawley rats. Taurine (icv) produced a significant, dose related increase of DOPA formation, but not of 5-hydroxytryptophan formation, in all brain regions studied, indicating an increased synthesis of catecholamines. Taurine significantly retarded dopamine depletion induced by alpha-methyltyrosine, but tended to enhance noradrenaline depletion. Endogenous levels of dopamine were increased, whereas levels of tyrosine, tryptophan, noradrenaline, serotonin, and 5-hydroxyindoleacetic acid were unchanged by icv taurine. A dose related decrease in rectal temperature and in motility was observed following treatment with icv taurine and intraparenteral 3-hydroxybenzyl hydrazine, compared to treatment with the decarboxylase inhibitor alone. Systemic parenteral administration of taurine caused no significant changes in brain monoamines, body temperature, or behavior, but subcutaneously administered taurine decreased heart noradrenaline levels. Results suggest that icv taurine inhibits firing in central dopamine neurons, stimulates firing in noradrenergic neurons, and has no effect on serotonergic neurons. Taurine appears to interfere with motor behavior and temperature regulation, possibly via effects on catecholaminergic neurons. 27 references. (Author abstract modified)

000137 Garcin, F.; Coyle, J. T. Department of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine, Baltimore, MD **The ontogenetic development of the opiate receptor and enkephalin in rat brain.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1379-1385).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, a developmental study of the opiate receptor and enkephalin in Sprague-Dawley rat brain was described. An opiate receptor, as measured by the stereospecific binding of (3H)naloxone, appeared in the fetal rat brain 1 week before birth and attained 40% of adult concentration by birth. A rostral to caudal sequence of receptor development was seen in the various brain regions. The developmental profile for endogenous morphine like factor (MLF), measured by receptor displacement assay, was similar to that of the opiate receptor. The MLF in the newborn appeared to be enkephalin, as seen in adult rat brain. 23 references. (Author abstract modified)

000138 Gayton, R. J.; Lambert, Lynn A.; Bradley, P. B. MRC Neuropharmacology Unit, Medical School, Birmingham B15 2TJ, England **Failure of ()-naloxone to antagonise responses to opioid peptides.** Neuropharmacology (Oxford). 17(7):549-551, 1978.

The effectiveness of the two enantiomers of naloxone as antagonists to the actions of three peptides (met-enkephalin, leu-enkephalin, and D-(ala)2-met-enkephalinamide) on single brainstem neurons was investigated in male Sprague-Dawley rats. Results indicate that ()-naloxone has no opioid antagonist activity when applied microiontophoretically to medullary reticular neurons of the rat. The ()-enantiomer never produced the neuronal excitation of the type sometimes seen with (-)-naloxone, occasionally produced a transient depression of firing. Results suggest that (-)-naloxone excites by antagonizing tonically released endorphins; if so, ()-naloxone coud be a useful tool for testing

the receptor specificity of opioid drugs and for identification of enkephalinergic pathways in the CNS. 6 references. (Author abstract modified)

000139 Gehrmann, J. E.; Killam, K. F., Jr. Department of Pharmacology, School of Medicine, University of California, Davis, CA 95616 **Studies of central functional equivalence -- I. Time-varying distribution of power in discrete frequency bands of the EEG as a function of drug exposure.** Neuropharmacology (Oxford). 17(9):747-759, 1978.

The EEG was recorded during exposure to various psychotropic drugs in Macaca mulatta monkeys with chronically implanted epidural electrodes. Power spectra were computed for 34 minute segments of 4 second continuous epochs over a bandwidth of 0.25-64.0Hz with 0.25Hz resolution. Sedatives (glutethimide, amobarbital, and meprobamate) produced their greatest energy increase in the high frequency bands (16-64Hz) and the state was stable. In contrast, anxiolytic drugs (chlordiazepoxide and clonazepam) showed energy increases of lesser magnitude and only in the lower frequency bands (8-32Hz), with less state stability. Agents with mixed pharmacological effects (clorazepate and nitrazepam) produced mixed effects on the EEG spectra. 17 references. (Author abstract modified)

000140 Geller, H. M.; Taylor, D. A.; Hoffer, B. J. Department of Pharmacology, CMDNJ, Rutgers Medical School, Piscataway, NJ 08854 **Benzodiazepines and central inhibitory mechanisms.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(2):81-88, 1978.

The effect of diazepam on spontaneous activity and on drug and electrically induced inhibition of neuronal activity was investigated in male Sprague-Dawley rats. Doses of diazepam that did not alter spontaneous firing rates markedly enhanced gamma-aminobutyric acid (GABA) mediated inhibitions in cerebellum in situ and in tissues cultures of hypothalamus. The effects of diazepam were readily reversible and could be antagonized by picrotoxin. Diazepam had no apparent effect on glycine or norepinephrine induced inhibition. It is concluded that actions of diazepam are mediated, at least in part, by a specific increase in GABA mediated inhibition in the CNS. 46 references. (Author abstract modified)

000141 Gellert, Vance F.; Holtzman, Stephen G. Department of Pharmacology, Emory University, Atlanta, GA 30322 **Development and maintenance of morphine tolerance and dependence in the rat by scheduled access to morphine drinking solutions.** Journal of Pharmacology and Experimental Therapeutics. 205(3):536-546, 1978.

A procedure to overcome some difficulties of oral drug self-administration in a technique for establishing and maintaining tolerance to and physical dependence upon morphine in the rat is described. Rats housed in a cabinet designed to control their access to water or morphine solutions were trained to drink all of their fluid as morphine solutions or tap water during 5 minute access periods scheduled at 2 A.M.,8 A.M.,2 P.M.,and 8 P.M. On this schedule, the morphine drinking rats consumed an average of 29%, 27%, 21% and 23% of their total daily fluid during the four respective access periods. The rats that had access to the 0.05% morphine solution drank an average of 53mg/kg/day of morphine. Separate groups of rats were tested for morphine tolerance and dependence at 4-day intervals. Tolerance to the analgesic effect of challenge doses of morphine (3, 6 and 9mg/kg) was first detected after 10 days of morphine drinking and reached a plateau after 18 days. Withdrawal scores for rats injected with 0.3or 3mg/kg of naloxone reached a plateau between 14 and 18 days of morphine drinking, whereas the scores of rats given 0.03mg/kg were still increasing after 26 days of drinking. Ninety percent of the rats accepted the morphine solutions and drank regularly for the 26 days the solutions were offered. They remained healthy throughout this period and were visibly indistinguishable from the water-drinking control rats. 31 references. (Author abstract modified)

000142 Gerhards, Hermann J. Department of Pharmacology, Hoechst AG, D-6230 Frankfurt/Main 80, Germany **Neuropharmacological profile of clobazam, a new 1',5'-benzodiazepine.** Psychopharmacology (Berlin). 58(1):27-33, 1978.

The effect of the new 1,5-benzodiazepine clobazam on visual evoked potentials (VEPs) and spontaneous EEG in the conscious rabbit and on spinal polysynaptic reflexes in the decerebrated cat was studied in comparison to the 1,4-benzodiazepine diazepam. Colbazam was half as potent as diazepam in depressing the amplitude of VEPs in the nonanesthetized rabbit, whereas the depressing effect on spinal polysynaptic reflexes in the decerebrated cat was only 1/7-1/30 of the diazepam effect. The action of clobazam and diazepam on VEP also showed differences in time course, i.e.,the peak effect of clobazam lasted from 1 to 6 hours after application, whereas the effect of diazepam appeared after 10 minutes and declined after 1 hour. However the delayed effect of clobazam was only slightly weaker than that of diazepam. Both compounds had similar effects on computer-analyzed spontaneous EEG in the rabbit (power spectrum analysis), with an increase of power in the beta-bands. It is concluded that a comparison of the effect of anxiolytic drugs on computer analyzed EEG and on spinal polysynaptic reflexes may be helpful in developing more specific anxiolytic and sedative drugs. 28 references. (Author abstract modified)

000143 Ghosh, P.; Bhattacharya, S. K. Department of Pharmacology, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India **Anticonvulsant action of cannabis in the rat: role of brain monoamines.** Psychopharmacology (Berlin). 59(3):293-297, 1978.

The role of brain monoamines in the anticonvulsant action of Cannabis indica resin (CI) against maximal electroshock induced seizures was investigated in Wistar rats. Delta-9-tetrahydrocannabinol content of cannabis resin was estimated to be 17%. The anticonvulsant action of CI (200mg/kg, intraperitoneally) was significantly inhibited after pretreatment with drugs that reduce brain serotonin activity but not by drugs that reduce brain catecholamine activity. Similarly, the anticonvulsant action of a subanticonvulsant dose (50mg/kg) of CI was potentiated by serotonin precursors but not by catecholamine precursors. Potentiation of the anticonvulsant action of CI by nialamide or imipramine was inhibited after pretreatment with 5,6-dihydroxytryptamine. Results suggest that the anticonvulsant action of CI in the rat is mediated by serotonin and not by catecholamines. 43 references. (Author abstract modified)

000144 Giambalvo, Cecilia T.; Snodgrass, S. Robert. Dept. of Neurology/Neuroscience, Children's Hospital Medical Center and Harvard Medical School, Boston, MA 02115 **Effect of p-chloroamphetamine and 5,7-dihydroxytryptamine on rotation and dopamine turnover.** Brain Research (Amsterdam). 149(2):453-467, 1978.

Injections of p-chloroamphetamine (PCA) or 5,7-dihydroxytryptamine (DHT) (after pretreatment with desmethylimipramine) into the median raphe nucleus (MRN) caused depletions of serotonin (5-HT) and 5-hydroxyindoleactic acid (5-HIAA) in the cortex and striatum, and a decrease of cortical 5-HT uptake without affecting NE uptake. Unilateral injections of these neurotoxins into the MRN caused contralateral rotation, which was blocked by haloperidol. The size of the lesion correlated with the rate of rotation and the decrease in 5-HT turnover in the

cortex. A significant correlation between the rate of rotation and the decrease in cortical 5-HT turnover, and the increase in striatal DA turnover was found. Moreover, there was a significant correlation between the decrease in cortical 5-HT turnover and the increase in striatal DA turnover. It was found that injections of DHT into the SN produced similar behavioral and biochemical changes as did the MRN lesions. In this model, amphetamine and apomorphine produce turning in the same direction, whereas they have opposite effects after lesions of the nigrostriatal pathway where postsynaptic DA supersensitivity occurs. Presynaptic changes appear to determine turning in this model. An inhibitory role of the serotonergic MRN on the dopaminergic nigrostriatal pathway mediated via the substantia nigra (SN) is suggested. 42 references. (Author abstract)

000145 Gibson, C. J.; Wurtman, R. J. McGill University, Faculty of Medicine, Montreal, Quebec, Canada **Physiological control of brain norepinephrine synthesis by brain tyrosine concentration.** Life Sciences. 22(16):1399-1406, 1978.

The effects of treatments that increase brain tyrosine levels on brain norepinephrine syntheses were investigated with rats pretreated with probenecid or exposed to a cold environment. The intraperitoneal administration of tyrosine to rats caused proportional increases in brain tyrosine levels and in the accumulation of the norepinephrine metabolite 3-methoxy-4-hydroxyphenylethyleneglycol-sulfate (MOPEG-SO4) after probenecid. Brain tyrosine level after tyrosine administration or after the consumption of a single meal is also positively correlated with brain MOPEG-SO4 accumulation in rats that do not receive probenecid but are subjected to cold stress. These observations extend an earlier finding that brain tyrosine level can affect the rates at which catecholaminergic neurons synthesize and turn over their transmitters. 13 references.

000146 Gillin, J. Christian; Hong, J. S.; Yang, H.-Y. T.; Costa, E. NIMH, Bethesda, MD 20014 **Does lithium act by selectively affecting a brain enkephalin system?** Bethesda, MD, NIMH, 1978. 12 p.

A paper given at the Conference on Lithium Controversies and Unresolved Issues, held in New York, June 1978, is presented. A study to investigate the dose and time dependent transient increases in (Met5)-enkephalin (ME) and (Leu5)-enkephalin (LE) in caudate nucleus and globus pallidus in rat brain upon adminstration of lithium is described. Dose and time dependent increases were observed in caudate nucleus, nucleus accumbens, and globus pallidus. Neither benztropine nor parachlorophenylalanine altered the content of ME or the increase in ME produced by lithium. The data suggest that the enkephalin system may be involved in the action of lithium. 19 references. (Author abstract modified)

000147 Gmelin, Gernot W. Basic Medical Research, Sandoz Ltd., CH-4002 Basel, Switzerland **Microelectrophoretic studies with 2-bromo-alpha-ergocriptine on dopaminergic neurons in the feline caudate nucleus.** Life Sciences (Oxford). 23(5):485-487, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- new Biochemical Approaches, held in Beerse, Belgium, July 1978, the effects of microelectrophoretically applied dopamine and pressure released 2-bromo-alpha-ergocriptine (CB-154) on the spontaneous activity of single neurons in the cat caudate nucleus are reported. Dopamine reduced the spike rate of one type of dopamine sensitive neuron in the caudate and facilitated firing of a second type of dopamine sensitive neuron. Both types of neuron were influenced by pressure released CB-154: CB-154 excited neurons that were excited by dopamine and amplified dopamine inhibition in the other type of CB-154. It is suggested that CB-154 works as a modulator and increases the efficiency of dopamine. 3 references. (Author abstract modified)

000148 Godfraind, J. M. Laboratoire de Neurophysiologie, Universite de Louvain, UCL-5449, avenue Hippocrate 54, B-1200 Brussels, Belgium **Acetylcholine and somatically evoked inhibition on perigeniculate neurones in the cat.** British Journal of Pharmacology (London). 63(2):295-302, 1978.

Perigeniculate neurons in cats were inhibited by iontophoretically applied acetylcholine (ACh). Under chloralose anesthesia, perigeniculate neurons could be divided into two groups with regard to their spontaneous activity, sensitivity to glutamate, and reaction to sensory inputs: somatic sensory stimulation clearly inhibited the glutamate discharges of perigeniculate neurons characterized by a high sensitivity to glutamate and the absence of spontaneous activity, while ACh had no clear inhibitory effect. Under fluothane and urethane anesthesia, no somatic sensory influence was noticed, but ACh depressed almost all perigeniculate neurons. In an unanesthetized midpontine pretrigeminal preparation, the inhibitory effect of ACh was confirmed. No conditions were found under which the inhibitory influences of ACh and of somatic sensory stimulation could be observed simultaneously in the same neuron. Therefore, it could not be established whether ACh mediates the somatic sensory influences on perigeniculate cells. 50 references. (Author abstract)

000149 Gold, M. S.; Donabedian, R. K.; Redmond, D. E., Jr. Department of Psychiatry, Yale University School of Medicine, New Haven, CT **Clonidine-induced increase in serum growth hormone: possible role of epinephrine-mediated synapses.** Psychoneuroendocrinology (Oxford). 3(2):187-194, 1978.

The effects of the alpha-adrenergic agonist clonidine and the adrenergic antagonist piperoxane on serum growth hormone (GH) levels were examined in M. arctoides. At doses believed to increase or decrease activity at epinephrine mediated synapses, clonidine (10microg/kg), but not piperoxane (1.0and 2.5mg/kg), produced a significant rise in serum GH levels 30 minutes after the infusion. Administration of piperoxane before or after the infusion of clondine blocked the clonidine induced rise in serum GH. Results support the hypothesis that the clonidine induced increase in serum GH is mediated by alpha-adrenergic receptors and suggest a role for epinephrine mediated synapses in the stimulation of GH secretion. 62 references. (Author abstract modified)

000150 Gould, Susan E.; Handley, Sheila L. Department of Pharmacy, University of Aston, Birmingham, England **Dose-dependent dual action of kynurenine, a tryptophan metabolite, on the turnover of 5-hydroxytrytamine.** British Journal of Pharmacology (London). 63(2):392, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society, in Guildford, England, the effects of the tryptophan metabolite, kynurenine, on 5-hydroxytryptamine (5-HT) turnover were reported. Two hours after pretreatment with (plus or minus)-kynurenine (0.5or 5mg/kg) in male Bk/W mice, there was no significant change in plasma kynurenine levels, but brain kynurenine had increased by 94 and 86%, respectively. Brain 5-HT turnover was significantly decreased by 0.5mg/kg kynurenine, but 5mg/kg had no effect. The dual effect of these two doses on brain 5-HT turnover is consistent with the previously reported dual effect of kynurenine on the 5-HT and 5-hydroxytryptophan induced head twitch. 9 references. (Author abstract modified)

000151 Govoni, S.; Spano, P. F.; Trabucchi, M. Institute of Pharmacology and Pharmacognosy, University of Milan, Via A.

Del Sarto 2l, I-20129 Milan, Italy **(3H)haloperidol and (3H)spiroperidol binding in rat striatum during aging.** Journal of Pharmacy and Pharmacology (London). 30(7):448-449, 1978.

The technique of labeling postsynaptic dopamine receptor sites with (3H)haloperidol or with (3H)spiroperidol was used to investigate dopaminergic receptor function during aging. Senescent animals showed a significant reduction, about 40%, of specific (3H)haloperidol binding to striatal membranes. The stimulation of striatal dopam ine sensitive adenylate cyclase induced by dopamine measured in the same groups showed dramatic reduction in rats 30 months old compared with rats 10 months old. This confirmed the data obtained with rats 3 months old and 24 months old of a different strain. The binding studies were extended to verify if the binding characteristics were the same in both groups of animals and to determine whether the decreased binding observed in senescent rats was due to a decrease in the number of binding sites or to a decreased receptor affinity. The results show that the decreased binding by senscent rats of (3H)haloperidol appears to be confirmed with (3H)spiroperidol. This appears to be due to a decreased receptor affinity rather than to the total number of binding sites. Results clearly support the hypothesis of a decreased dopaminergic receptor affinity with aging. The response of dopamine sensitive adenylate cyclase to dopamine stimulation seems to be influenced more by aging than is the specific binding of (3H)haloperidol. 19 references.

000152 Grandison, L.; Guidotti, A. Laboratory of Preclinical Pharmacology, National Institute of Mental Health, St. Elizabeths Hospital, Washington, DC 20032 **GABA receptors in rat anterior pituitary: evidence for control of prolactin release. (Unpublished paper)** Washington, DC, NIMH, 1978. 23 p.

A sample of Sprague-Dawley rats was used to determine the role of GABA in control of prolactin (PRL) release using muscimol, a specific long acting GABA analogue possessing high affinity for GABA receptors. Evidence that muscimol inhibits PRL release and that this inhibitory action results from binding to GABA receptor sites in the anterior pituitary is presented from both in vivo and in vitro studies. Muscimol was found to inhibit PRL release by stimulating GABA receptors directly on the anterior pituitary and suggests a possible psychological role of pituitary GABA receptors in the control of PRL release. These results support the findings of Schally et al, who demonstrated the inhibition of PRL release by GABA when it is added to anterior pituitary glands in vitro. 18 references.

000153 Green, A. R.; Grahame-Smith, D. G. MRC Unit and University Department of Clinical Pharmacology, Radcliffe Infirmary, Oxford OX2 6 HE, England **Processes regulating the functional activity of brain 5-hydroxytryptamine: results of animal experimentation and their relevance to the understanding and treatment of depression.** Pharmakopsychiatrie/Neuro-Psychopharmakologie (Stuttgart). 11(1):3-16, 1978.

The processes regulating the functional activity of rat brain 5-hydroxytryptamine (5-HT) and the way that drugs used to treat depression act on these processes were investigated. Use was made of both biochemical measurements and a behavioral model in which the hyperactivity which follows increased 5-HT synthesis and release was measured as an index of functional activity of the amine. The following mechanisms are suggested to be important in the control of 5-HT function: presynaptic mechanisms (precursor availability and the transport of tryptophan across the neuronal membrane, intraneuronal metabolism by monoamine oxidase, compartmentation, release and reuptake) and postsynaptic mechanisms (the sensitivity of the postsynaptic receptor, the role of peptides in altering the size of the postsynaptic response and the action of other neurotransmitters controlling the magnitude of the postsynaptic response). In this regard, 5-HT function has been shown to be altered by both dopamine and gamma-aminobutyric acid (GABA). The action of antidepressant drugs on these mechanisms is discussed. 59 references. (Author abstract modified)

000154 Green, A. R.; Heal, D. J. MRC Unit, Radcliffe Infirmary, Oxford OX2 6HE, England **Release of dopamine in the nucleus accumbens of rats by thyrotropin releasing hormone (TRH).** British Journal of Pharmacology (London) 63(2):385-386, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society in Guildford, England, the effects of thyrotropin releasing hormone (TRH) in the nigrostriatal and limbic systems were reported. Injection of TRH into the nucleus accumbens (NA) increased motor activity and produced behavioral changes similar to those effected by dopamine (DA) in rats. These effects were potentiated by pretreatment with tranylcypromine but blocked by haloperidol. Destruction of the presynaptic dopaminergic terminals with 6-hydroxydopamine abolished the effects of intraaccumbens injection of TRH. Peripheral administration of TRH produced a shortlasting increase in locomotion and behavioral changes similar to those induced by injection into the NA; these effects were blocked by haloperidol and were not mimicked by thyroid stimulating hormone. TRH failed to produce turning in unilateral nigrostriatal lesioned rats. Results suggest that TRH can release DA in the NA but not in the caudate nucleus. 3 references. (Author abstract modified)

000155 Gros, C.; Malfroy, B.; Swerts, J. P.; Dray, F.; Schwartz, J. C. Unite de Radioimmunologie Analytique, INSERM FRA No. 8, Institut Pasteur, 28 rue du Docteur Roux, F-75015 Paris, France **Effects of cycloheximide and/or morphine on enkephalin levels in mouse striatum.** European Journal of Pharmacology (Amsterdam). 51(3):317-318, 1978.

The effects of cycloheximide and morphine on enkaphalin levels in mouse striatum were investigated. Intraperitoneal administration of 30mg/kg cycloheximide elicited after 3.5hours a significant reduction in both met-enkephalin and leu-enkephalin; this effect suggests that the formation of the two peptides depends on ribosomal protein synthesis. Intraperitoneal administration of morphine (50mg/kg) after 3 hours significantly increased the met-enkephalin level in striatum; morphine also significantly elevated leu-enkephalin levels in mice pretreated with cycloheximide. Results suggest that the turnover rate of the opioid peptides is relatively high and that it can be modified rapidly by a feedback mechanism, as is the case for other putative neurotransmitters. 5 references.

000156 Guidotti, A.; Gale, K.; Toffano, G.; Vargas, F. M. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Tolerance to tyrosine hydroxylase activation in n. accumbens and c. striatum after repeated injections of "classical" and "atypical" antischizophrenic drugs.** Life Sciences (Oxford). 23(5):501-505, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, kinetic characteristics of tyrosine hydroxylase (TH) in the corpus striatum, nucleus accumbens, substantia nigra, and locus coeruleus of Sprague-Dawley rats treated chronically with classical (haloperidol) and atypical (clozapine) antischizophrenic drugs are reported. Tolerance to the kinetic activation of TH in both corpus striatum and nucleus accumbens was produced as a result of haloperidol treatment. Cross-tolerance to other classical antischizophrenic drugs was also observed. Chronic clozapine failed to produce tolerance to the activation of TH in any of the brain regions studied. 12 references. (Author abstract modified)

000157 Guidotti, A.; Grandison, L. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Participation of hypothalamic endorphins in the control of prolactin release.** Advances in Biochemical Psychopharmacology. 18:191-198, 1978.

The physiological role of the hypothalamic endorphins in the control of pituitary function was examined in Sprague-Dawley rats. Systemic administration of the opiate antagonist naltrexone produced a striking decrease (50-60%) in the basal serum prolactin concentration in male rats and in female ovariectomized, estrogen primed rats. Naltrexone pretreatment also significantly reduced the increase in serum prolactin level induced by electric foot shock stress. These results indicate that the endorphin hypothalamic system may provide tonic control over prolactin release, as well as a modulatory link between sensory emotional perception and hormone release. Pharmacological inactivation of dopamine (DA) receptor function with haloperidol or reserpine increased serum prolactin levels and blocked the action of naltrexone on prolactin release. Results suggest that the arcuate nucleus median eminence dopaminergic tract may be the final neuronal link in the action of opiates and that endorphins and DA may regulate prolactin release according to an arrangement in which the two neurons act in a series. 32 references.

000158 Haas, H. L.; Wolf, P.; Palacios, J. M.; Garbarg, M.; Barbin, G.; Schwartz, J. C. Neurophysiologisches Laboratorium, Neurochirurgische Universitatklinik, CH-8091 Zurich, Switzerland **Hypersensitivity to histamine in the guinea-pig brain: microiontophoretic and biochemical studies.** Brain Research (Amsterdam). 156(2):275-291, 1978.

Possible alterations in the sensitivity of histaminergic receptors in the cerebal cortex and hippocampus following electrolytic lesions of the medial forebrain bundle (MFB) were investigated in guinea pigs. Microiontophoretic application of histamine or noradrenaline revealed hypersensitivity in cortical neurons ipsilateral but not contralateral to the lesions, whereas responses to iontophoretically applied gamma-aminobutyric acid were not modified. In contrast, the responsiveness of histamine sensitive cyclic adenosine monophosphate generating systems was not modified in the cerebral cortex or in the hippocampus following MFB lesion. Data obtained with specific agonists of the two classes of histaminergic receptors and measurements in the presence of a phosphodiesterase inhibitor revealed no attention in the responsiveness of histaminergic receptors after MFB lesion. Several hypotheses are discussed to reconcile the denervation hypersensitivity revealed by iontophoresis with the unaltered responsiveness of the histaminergic receptors linked to adenylate cyclase. 58 references. (Author abstract modified)

000159 Haigler, Henry J. Department of Pharmacology, Emory University, Atlanta, GA 30322 **Morphine: effects on serotonergic neurons and neurons in areas with a serotonergic input.** European Journal of Pharmacology (Amsterdam). 51(4):361-376, 1978.

The effects of morphine on the firing rates of 5-hydroxytryptamine (5-HT) containing neurons in the midbrain raphe nuclei (dorsal raphe and median raphe) and of neurons in the amygdala, optic tectum, and subiculum, which are thought to receive raphe input, were investigated in male Sprague-Dawley rats. Morphine administered microiontophoretically slowed or inhibited the spontaneous neuronal firing in 34% of the cells studied in these areas; systemically administered morphine gave similar results. However, the inhibition of neuronal firing by morphine in these five areas of the serotonergic system was not a specific narcotic effect, since it was not stereospecific and was rarely blocked by naloxone. The inhibitory effect of morphine does not appear to be related to its analgesic effects, since neuronal firing in the midbrain raphe nuclei and the possible postsynaptic areas was rarely altered by a nociceptive stimulus. It is concluded that the analgesic effect of morphine is not related to an effect on neurons in the midbrain raphe nuclei and three areas that receive 5-HT input, and that the effect of morphine on neurons in these five areas of the serotonergic system is not a specific narcotic effect. 48 references. (Author abstract modified)

000160 Hartley, Elizabeth J.; Seeman, Philip. Department of Pharmacology, University of Toronto, Toronto, Canada M5S 1A8 **The effect of varying 3H-spiperone concentration on its binding parameters.** Life Sciences (Oxford). 23(5):513-517, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, the effect of varying tritiated spiperone concentration on its binding parameters is reported. Higher concentrations of spiperone were required to compete against binding of 3H-spiperone to calf caudate when higher concentrations of 3H-spiperone were used. The Cheng-Prusoff equation did not adequately apply to this hydrophobic ligand, since the inhibitory constant values varied directly with the 3H-spiperone concentration. The equation was adequate only when the total concentrations of 3H-spiperone were replaced by the measured free concentrations. 23 references. (Author abstract modified)

000161 Hatoum, Hind T.; Davis, W. Marvin. Dept. of Pharmacology, School of Pharmacy, University of Mississippi, University, MS 38677 **Motility effects of amphetamine and 4-methoxyamphetamine (PMA): interaction with agents altering central neuromediators.** Research Communications in Psychology, Psychiatry and Behavior. 3(4):325-334, 1978.

Motility of male albino mice was measured via photoactometers after intraperitoneal d-amphetamine sulfate (AMP) or dl-methoxyamphetamine HCl (PMA) in doses of 5mg/kg and 10mg/kg, respectively. Pretreatment effects on responses to AMP and PMA were tested for scopolamine (SCO; lmg/kg subcutaneously (sc)), physostigmine (PHY 0.4mg/kg sc) and Ro4-1284 (10mg/kg sc). PMA greatly reduced activity of both grouped (five per cage) and single mice, whereas AMP caused hyperactivity. PHY greatly suppressed motility in all cases. SCO opposed the behavioral effects of both amphetamines, although opposite in direction. Depletion of brain catecholamines by Ro4-1284 had a general inhibitory effect on motor activity, which opposed the effect of AMP but added to the effect of PMA on mobility. Relation of the data to the influence of central neuromediators controlling motility and to the mode of action of AMP and PMA is considered. 25 references. (Author abstract)

000162 Henry, Kenneth R.; Rhoades, Robert W. Department of Psychology, University of California, Davis, CA 95616 **Relation of albinism and drugs to the visual evoked potential of the mouse.** Journal of Comparative and Physiological Psychology. 92(2):271-279, 1978.

Changes in the pattern of genetic and drug effects on the Visual Evoked Potential (VEP) of the mouse as a function of stimulus intensity were studied. The individual and combined influences of pentobarbital and chlorprothixene on the early components of the cortical (VEP) were examined in the C57BL/6 mouse. Pentobarbital produced a large increase in latency, and chlorprothixene resulted in a smaller latency increase. When these agents were combined, their effects on the VEP latency were antagonistic. The effects of pentobarbital on VEP amplitude varied as a function of flash intensity, and this barbiturate anesthetic also produced qualitative VEP waveform changes. When the congenic albino (c/c) C57BL/6 was compared with

the black (/) C57BL/ mouse, pentobarbital anesthesia produced a decrease of latency with increasing stimulus intensity only to the c/c genotype, whereas VEP amplitudes were similarly affected by pentobarbital in both genotypes. 20 references. (Author abstract modified)

000163 Herreros, B.; Garcia-Sancho, J.; Barbosa, E. Departmento de Fisiologia y Bioquimica, Facultad de Medicina, Valladolid, Spain **Effects of histidine on the transport of L-DOPA by slices of brain cortex and striatum of the rat.** Journal of Neurochemistry (Oxford). 30(5):1101-1104, 1978.

The effects of L-histidine on the uptake of L-DOPA by slices of brain cortex and striatum from male Wistar rats was analyzed. L-Histidine inhibited the uptake of L-DOPA by brain slices in short-term experiments but increased uptake after long-term incubation. The potentiation of the steady state accumulation of L-DOPA was the result of the steric effects of histidine on the transport of L-DOPA at both sides of the cell membrane. Results demonstrate the importance of heteroexchange phenomena in determining the cellular level attained for a given amino acid at the steady state. 13 references. (Author abstract)

000164 Hicks, T. P.; McLennan, H. Department of Physiology, University of British Columbia, 2075 Wesbrook Place, Vancouver, British Columbia, Canada V6T 1W5 **Comparison of the actions of octopamine and catecholamines on single neurones of the rat cerebral cortex.** British Journal of Pharmacology (London). 64(4):485-491, 1978.

The actions of microiontophoretically applied octopamine, noradrenaline, and dopamine on single cerebral cortical neurons were compared in rats. Octopamine both excited and depressed neurons in the cortex. Frequently cells depressed by noradrenaline were excited by octopamine, and occasionally the converse was true. Dopamine elicited excitations which were not correlated with octopamine induced effects. When octopamine and noradrenaline both caused depressant effects, octopamine was frequently less potent than noradrenaline; when these amines were excitatory, octopamine appeared at least as and sometimes more potent than noradrenaline. Octopamine was only weakly effective on cortical neurons identified by antidromic stimulation of the pyramidal tract or synaptically excited by stimulation of the ventrobasal thalamus. Alpha-flupenthixol and propranolol, at doses which were effective in blocking the actions of dopamine and noradrenaline, respectively, were without effect on octopamine elicited changes in firing rate. Results suggest that receptors sensitive to octopamine, which are pharmacologically distinct from noradrenaline and dopamine receptors, may exist on central neurons of the rat. 35 references. (Author abstract modified)

000165 Hill, R. C.; Roemer, D.; Buescher, H. H. Medical and Biological Research Department, Sandoz A.G., CH-4002 Basel, Switzerland **Some pharmacological properties of FK 33-824, a stable orally active analogue of methionine enkephalin.** Advances in Biochemical Psychopharmacology. 18:211-215, 1978.

The pharmacological properties of FK33-824, a pentapeptide structurally related to methionine-enkephalin, were investigated in rats, mice, rhesus monkeys, and rabbits. The pharmacological actions of FK33-824 were similar to those of beta-endorphin. Both agents caused long-lasting analgesia, with FK33-824 about 30 times more potent than beta-endorphin on a molar basis in the tail flick test. Both drugs caused tolerance and physical dependence and exhibited cross-tolerance with morphine. In rats, both agents caused a marked stimulation of growth hormone and prolactin secretion. Results indicate that FK33-824 may be useful clinically, as well as in studies of the actions of the opioid peptides. 8 references.

000166 Hill, R. G.; Pepper, Christine M. Department of Pharmacology, Medical School, University of Bristol, Bristol BS8 1TD, England **Selective effects of morphine on the nociceptive responses of thalamic neurones in the rat.** British Journal of Pharmacology (London). 64(1):137-143, 1978.

The effects of intravenous morphine on the firing of single sensory neurons in the thalamus of the anesthetized rat are described. Low doses (0.38-2.0mg/kg) of morphine depressed the excitation of nucleus lateralis neurons produced by natural noxious stimuli, but had no effect on spontaneous activity. The excitation of some of these neurons by iontophoretically applied acetylcholine or glutamate was also depressed by morphine. These effects were reversed by intravenous (0.25-1.17mg/kg) but not by iontophoretically applied (50-200nA) naloxone. Similar or higher doses of morphine (0.58-5.07mg/kg) did not prevent the excitation of ventrobasal thalamic neurons by nonnoxious stimuli. The possibility of a direct action of intravenous morphine in the thalamus is discussed. 31 references. (Author abstract)

000167 Hill, S. J.; Young, J. M. Department of Pharmacology, University of Cambridge, Hills Road, Cambridge CB2 2QD, England **Evidence for the presence of histamine H1-receptors in guinea-pig brain.** British Journal of Pharmacology (London). 63(2):394-395, 1978.

At the March 1978 meeting of the British Pharmacological Society in Guildford, England, evidence for the presence of histamine H1-receptors in guniea-pig brain was presented. Appreciable binding of (3H)mepyramine, a selective ligand for histamine H1 receptors, was found in guinea-pig whole brain homogenates. This binding could be inhibited by promethazine or chlorpheniramine. The total number of H1-receptors varied from one preparation to another, with a mean value of 124pM/g protein. 3 references. (Author abstract modified)

000168 Hill, Stephen J.; Young, Michael. Department of Pharmacology, University of Cambridge, Hills Road, Cambridge, CB2 2QD, England **Antagonism of central histamine H1 receptors by antipsychotic drugs.** European Journal of Pharmacology (Amsterdam). 52(3/4):397-399, 1978.

The inhibition of the binding of tritiated mepyramine to membrane fractions from guinea-pig brain by eight widely used antipsychotic drugs was studied to determine their potencies as antagonists of central histamine H1-receptors. The phenothiazines chlorpromazine, fluphenazine, thioridazine, and trifluoperazine were potent H1 antagonists. Both alpha-fluphenazine and beta-flupenthixol were potent inhibitors; butaclamol was a much less potent inhibitor and showed stereospecificity. Haloperidol and spiperone were markedly weaker antihistamine than the phenothiazines. 8 references. (Author abstract modified)

000169 Hindmarsh, K. W.; Hamon, N. W.; LeGatt, D. F.; Wallace, S. M. College of Pharmacy, University of Saskatchewan, Saskatoon, Saskatchewan, Canada S7N 0W0 **Effect of diphenhydramine on methaqualone metabolism: an in vitro study.** Journal of Pharmaceutical Sciences. 67(11):1547-1549, 1978.

The effect of diphenhydramine on the metabolism of methaqualone in vitro by the male Wistar rat hepatic 10,000xg supernatant fraction was determined. A gas/liquid chromatographic (GLC) assay was developed to quantitate the methaqualone metabolite 2-methyl-3-(2-hydroxymethylphenyl)-4(3H)-quinazolinone. Standard curves were linear, and recovery of the metabolite from tissue homogenates averaged 89%. In vitro metabolism of methaqualone by the 10,000xg supernatant fraction of rat liver homogenate was measured by monitoring metabolite formation with the GLC assay. Diphenhydramine inhibited the in vitro metabolism of methaqualone in a concentration dependent

manner. The significance of this inhibition is discussed in relation to use and abuse of methaqualone/diphenhydramine combinations. 23 references. (Author abstract modified)

000170 Hirsch, J.; Ehrenpreis, S.; Comaty, J. E. Department of Pharmacology, SUNY Downstate Medical Center, Brooklyn, NY 11203 **Effect of lithium chloride on electrically stimulated guinea-pig longitudinal muscle-myenteric plexus.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 232(1):4-13, 1978.

Lithium chloride (LiCl), in a concentration range of 0.0001M to 0.01M, increased the height of electrically induced contractions of guinea-pig longitudinal muscle/myenteric plexus preparations. Higher concentrations of the salt caused a progressive block of contractions. Sodium chloride showed no augmentation of contraction height, but concentrations above 0.01M blocked contractions. Inhibition of contractions by LiCl exactly paralleled inhibition of responses to exogenous acetylcholine (ACh), suggesting that the site of action is directly on the muscle. Sodium chloride caused insignificant inhibition of responses to exogenous ACh. Guinea-pigs injected chronically with high doses of LiCl (5mEq/kg/day for 2 months) showed no stimulatory effect of LiCl in vitro, but did show inhibition. This finding suggests that tolerance to at least some of the actions of LiCl may occur upon chronic administration, particularly if the dose used is very high. 25 references. (Author abstract)

000171 Hirsch, James D.; Grillo, Mary; Margolis, Frank L. Department of Physiological Chemistry and Pharmacology, Roche Institute of Molecular Biology, Nutley, NJ 07110 **Ligand binding studies in the mouse olfactory bulb: identification and characterization of a L-(3H)carnosine binding site.** Brain Research (Amsterdam). 158(2):407-422, 1978.

Binding sites for the dipeptide L-carnosine (beta-alanyl-L-histidine) were detected in membranes prepared from CD-1 mouse olfactory bulbs. The binding of L-(3H)carnosine was saturable, reversible, and stereospecific, with a dissociation constant of about 770nM. The stereospecific binding of L-carnosine represented about 30% of the total binding at pH 6.8and decreased markedly with increasing pH. Binding was stimulated by calcium; unaffected by zinc, magnesium, or manganese; and inhibited by sodium and potassium. Carnosine binding was sensitive to trypsin and phospholipases A and C, but not to neuraminidase. Some peptide analogues of carnosine were potent inhibitors of binding, but a variety of drugs serving as potent inhibitors in other binding systems had no effect on carnosine binding. Carnosine binding to mouse olfactory bulb membranes was 15 fold higher than that in membranes prepared from cerebral hemispheres, 5 fold higher than that in cerebellum membranes, and 3 fold higher than that in membranes from spinal medulla and the olfactory tubercle/lateral olfactory tract area. Peripheral deafferentation of the olfactory bulbs by intranasal irrigation with zinc sulphate led to a loss of more than 90% of the L-(3H)carnosine binding in 4-5 days, due to a loss of binding site stereospecificity and a subsequent loss of binding sites. 43 references. (Author abstract modified)

000172 Hitzemann, Robert J.; Natsuki, Reiko; Loh, Horace H. Langley Porter Neuropsychiatric Institute, San Francisco, CA 94143 **Effects of nicotine on brain 1-phosphatidylinositol-4-phosphate and 1-phosphatidylinositol-3,4-biphosphate synthesis and metabolism -- possible relationship to nicotine-induced behaviors.** Biochemical Pharmacology (Oxford). 27(21):2519-2523, 1978.

The effects of nicotine and other cholinergic drugs on the initial incorporation of labeled inorganic orthophosphate (32Pi) and (3H)glycerol into 1-phosphatidylinositol-4-phosphate (DPI) and 1-phosphatidylinositol-3,4-biphosphate (TPI) in Sprague-Dawley rat brain microsomal fractions were studied. Nicotine and eserine significantly decreased and mecamylamine increased 32P and (3H)TPI levels. Atropine had no effect on labeled TPI levels. Dose effect studies for nicotine revealed that as little as 0.1mg/kg intraperitoneal nicotine significantly decreased the accumulation of labeled TPI. It was concluded that pharmacologically relevant and nonconvulsive doses of nicotine can markedly affect brain polyphosphoinositide synthesis or metabolism; the nature of the effects is consistent with theories suggesting that the conversion of TPI to DPI releases membrane lipid bound calcium ions and thus increases membrane excitability. 18 references. (Author abstract)

000173 Holaday, John W.; Tseng, Liang-Fu; Loh, Horace H.; Li, Choh Hao. Neuroendocrinology and Neurochemistry Branch, Walter Reed Army Institute of Research, WRAMC, Washington, DC 20012 **Thyrotropin releasing hormone antagonizes beta-endorphin hypothermia and catalepsy.** Life Sciences. 22(17):1537-1544, 1978.

The effects of injection of thyrotropin-releasing hormone (TRH) on beta-endorphin-induced hypothermia and catalepsy were studied with rats. Injection of beta-endorphin intraventricularly produced an alteration of body temperature, a state of catalepsy, and an increase in antinociceptive latencies. Subsequent intraventricular injections of thyroptropin releasing hormone (TRH) reversed the ongoing changes in body temperature and catalepsy produced by beta-endorphin. Since TRH antagonized these effects in hypophysectomized rats, it is implied that these effects of TRH are independent of pituitary-thyroid involvement. In contrast to this, TRH did not alter the antinociception produced by beta-endorphin in either sham-control or hypophysectomized rats. The failure of TRH to antagonize all three of these opiate effects, as well as the inability of TRH to displace bound dihydromorphine from synaptic plasma membranes, suggests that the TRH-beta endorphin interaction is not at the opiate receptor. 24 references. (Author abstract modified)

000174 Hollt, Voker; Przewlocki, Richard; Herz, Albert. Department of Neuropharmacology, Max-Planck-Institut fur Psychiatrie, Kraepelinstrasse 2, D-8000 Munich 40, West Germany **Beta-endorphin-like immunoreactivity in plasma, pituitaries and hypothalamus of rats following treatment with opiates.** Life Sciences. 23(10):1057-1066, 1978.

Beta-endorphin was measured by radioimmunoassay in plasma, pituitary lobes, and hypothalamus of male Sprague-Dawley rats following treatment with morphine and naloxone. Beta-endorphin like immunoreactivity (BELI) in plasma was increased after high doses of morphine (50mg/kg, intraperitoneal route). An increase in BELI was also observed in morphine tolerant/dependent rats after precipitated withdrawal by naloxone. This release of BELI into plasma was accompanied by a significant reduction of BELI content in the anterior lobe of the pituitary and in the hypothalamus but not in the intermediate/posterior lobe of pituitary. Chronic treatment of the rats by subcutaneous implantation of morphine pellets (six 75mg pellets within 10 days) did not alter BELI levels in plasma or in pituitary lobes. However, long-term administration of morphine (21 pellets within 1 month) caused a significant reduction of the BELI content of anterior lobe and intermediate/posterior lobe of pituitary without changing the BELI levels in plasma. 15 references. (Author abstract)

000175 Holmes, J. H.; Kanfer, I.; Zwarenstein, H. Department of Pharmacology, Medical School, University of Cape Town, Observatory 7925, Cape Town, South Africa **Effect of benzodiazepine derivatives on human blood cholinesterase in vitro.** Research Communications in Chemical Pathology and Pharmacology. 21(2):367-370, 1978.

The in vitro effect of 10 benzodiazepine derivatives on the cholinesterases of human plasma and red cells was determined. Flurazepam, temazepam, lorazepam, flunitrazepam, and diazepam had an inhibitory effect on plasma cholinesterase of 60-90% and, with the exception of lorazepam, an inhibitory effect of 40-50% on red cell cholinesterase. Clonazepam, oxazepam, chlordiazepoxide, nitrazepam, and bromazepam had comparatively minor effects on both enzymes. 10 references. (Author abstract)

000176 Hope, Wendy; McCulloch, Marian W.; Rand, M. J.; Story, D. F. Department of Pharmacology, University of Melbourne, Parkville Victoria 3052, Australia **Modulation of noradrenergic transmission in the rabbit ear artery by dopamine.** British Journal of Pharmacology (London). 64(4):527-537, 1978.

The effects of dopamine on vasoconstrictor responses to field stimulation of sympathetic nerves and to exogenous noradrenaline were studied in the isolated ear artery of the rabbit. Responses to sympathetic nerve stimulation were depressed, initially, by infusions of dopamine (0.5-1mcM), but the responses partially recovered in the continued presence of dopamine. Responses to noradrenaline were unchanged at the start of the dopamine infusions, but were enhanced as the infusions progressed and after cessation of infusions. Dopamine (0.5mcM) reduced the stimulation induced efflux of tritium from segments of ear artery labeled with (3H)noradrenaline. Metoclopramide, haloperidol, and ergometrine (0.2mcM) prevented the inhibitory effect of 0.5mcM dopamine on the stimulation induced tritium release, but not inhibitory effect of 0.5mcM noradrenaline. Phenoxybenzamine (0.2and 1mcM) and phentolamine (1mcM) prevented the inhibitory effects of both noradrenaline and dopamine on the stimulation induced efflux. Phentolamine (0.2mcM) prevented the inhibition of the stimulation induced release by noradrenaline, but only partially prevented the inhibitory effect of dopamine on stimulation induced efflux. Results suggest a role for dopamine in the modulation of noradrenergic transmission. 47 references. (Author abstract modified)

000177 Huebert, Norman D.; Boulton, Alan A. Psychiatric Research Division, University Hospital, Saskatoon, Saskatchewan, Canada S7N OW8 **The effects of some stimulants and anti-psychotic drugs on urinary unconjugated tyramine levels in the rat.** Research Communications in Chemical Pathology and Pharmacology. 22(1):73-82, 1978.

The effects of intraperitoneal injections of amphetamine, methylphenidate, chlorpromazine, haloperidol, and combinations of haloperidol with methylphenidate or amphetamine on the urinary excretion of unconjugated meta-tyramine and para-tyramine were investigated in male Wistar rats. With the exception of a high dose of methylphenidate, none of the drug treatments significantly reduced by a low dose of amphetamine and by a high dose of methylphenidate, but was significantly increased by a high dose of amphetamine. These results differ from previous findings in the rat striatum and mesolimbic system, suggesting that the metabolism of the tyramines in peripheral tissues differs from that in certain brain regions. 45 references. (Author abstract modified)

000178 Hughes, I. E. Department of Pharmacology, Medical School, Thoresby Place, Leeds LS2 9NL, Yorkshire, England **The effect of amitriptyline on presynaptic mechanisms in noradrenergic nerves.** British Journal of Pharmacology (London). 63(2):315-321, 1978.

The effect of amitriptyline on presynaptic mechanisms in noradrenergic nerves was investigated in mouse vas deferens, using measurements of tritium overflow in response to electrical stimulation after incubation of the tissues with (3H)-(-)noradrenaline. Low concentrations of amitriptyline increased only the evoked tritium overflow, while higher concentrations increased both evoked and resting overflow. In the presence of atropine, cocaine, or phentolamine, amitriptyline still produced an increase in evoked tritium overflow. In the presence of cocaine and phentolamine together, however, the effect of amitriptyline on evoked overflow was abolished. It is concluded that amitriptyline may raise synaptic levels of noradrenaline by blocking presynaptic alpha-adrenoceptors controlling noradrenaline release and by blocking its uptake into sympathetic neurons. 18 references. (Author abstract modified)

000179 Hughes, J.; Kosterlitz, H. W.; McKnight, A. T. Unit for Research on Addictive Drugs, University of Aberdeen, Aberdeen, Scotland **The incorporation of (3H)-tyrosine into the enkephalins of striatal slices of guinea-pig brain.** British Journal of Pharmacology (London). 63(2):396, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society in Guildford, England, the incorporation of (3H)tyrosine into the enkephalins of striatal slices of guinea-pig brain was reported. The incorporation of (3H)tyrosine into the enkaphalins showed three distinct phases: an initial 2-hour lag phase, a linear phase of increasing incorporation over the next 3 hours, and fairly constant incorporation 6-7 hours after labeling. It is concluded that the enkephalins of the guinea-pig striatum can be synthesized locally, possibly from a precursor or precursors also produced locally. 1 reference. (Author abstract modified)

000180 Hughes, J.; Kosterlitz, H. W.; Sosa, R. P. Unit for Research on Addictive Drugs, University of Aberdeen, Aberdeen, Scotland **Enkephalin release from the myenteric plexus of the guinea-pig small intestine in the presence of cycloheximide.** British Journal of Pharmacology (London). 63(2):397, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society in Guildford, England, enkephalin release from the myenteric plexus of the guinea-pig small intestine in the presence of cycloheximide was reported. Following incubation with cycloheximide, electrical field stimulation at 10Hz reduced the enkephalin concentration by 16% in 30 minutes and by 46% in 60 minutes; no further significant reduction was noted after stimulation for 120 minutes. At a frequency of 1Hz, the loss of enkephalin was about 10% of that observed at 10Hz; no loss could be detected after stimulation at 0.1Hz for 4 hours. The reduction in enkephalin content due to stimulation was abolished by 0.3mcM tetrodotoxin. 3 references. (Author abstract modified)

000181 Hyttel, John. H. Lundbeck & Co. A/S, Ottiliavej 7-9, DK-2500 Valby, Denmark **A comparison of the effect of neuroleptic drugs on the binding of 3H-haloperidol and 3H-cis(Z)-flupenthixol and on adenylate cyclase activity in rat striatal tissue in vitro.** Progress in Neuro-Psychopharmacology. 2(3):329-335, 1978.

The binding of 3H-haloperidol (HAL) and 3H-cis(Z)-flupenthixol (FPT) and dopamine stimulated adenylate cyclase (AC) activity in striatal tissue from male Wistar rats were investigated in vitro. Results indicate that tritiated HAL and FPT bind to striatal membranes in a saturable manner, with dissociation constants of 3.1and 3.8nM, respectively. The number of binding sites for FPT was three times greater than for HAL. The binding of the two ligands appeared to be related to dopamine receptors. Neuroleptics inhibited the binding of HAL and FPT, as well as AC activity. Butyrophenones and diphenylbutylpiperidines were weak inhibitors of both FPT binding and AC activity. A very close correlation between the effects in FPT binding and AC was found, but correlations of

HAL and FPT were much weaker. 15 references. (Author abstract modified)

000182 Hyttel, John. Department of Pharmacology and Toxicology, H. Lundbeck & Co. A/S, Ottiliavej 7-9, DK-2500 Valby, Denmark **Dopamine-receptor binding and adenylate-cyclase activity in mouse striatal tissue in the supersensitivity phase after neuroleptic treatment.** Psychopharmacology (Berlin). 59(3):211-216, 1978.

The specific binding of tritiated halolperidol (3H-Hal) and the basal and dopamine (DA) stimulated adenylate cyclase activity in vitro were investigated in NMRI/BOM mice treated with a single dose or repeated doses of neuroleptic drugs. Shortly after a single intraperitoneal (ip) dose of teflutixol (5mg/kg), the binding of 3H-Hal was reduced to very low levels. Four and 5 days later, the apparent number of receptor binding sites was slightly reduced. Binding returned to normal levels after 6 days. The reduced binding probably reflects receptor blockade induced by teflutixol. Four days after treatment, both basal and DA stimulated adenylate cyclase were within normal limits. Six days after a single dose of piflutixol (O.O8mg/kg, ip), a slight increase in DA stimulated adenylate cyclase activity was observed. Three days after repeated oral doses of haloperidol (1.25mg/kg for 5 days), both basal and DA stimulated adenylate cyclase were unchanged. The specific binding of 3H-Hal was slightly reduced 5 days after termination of 3 weeks treatment with teflutixol (5mg/kg, ip daily), but was nearly normal 8 days after the last dose of teflutixol. Results neither support nor reject the hypothesis of an increased number of DA receptors in the supersensitivity phase after neuroleptic treatment in mice. 48 references. (Author abstract modified)

000183 Hyttel, John. Department of Pharmacology and Toxicology, H. Lundbeck & Co. A/S, Ottiliavej 7-9, DK-2500 Copenhagen-Valby, Denmark **Effect of a specific 5-HT uptake inhibitor, citalopram (Lu 10-171), on 3H-5-HT uptake in rat brain synaptosomes in vitro.** Psychopharmacology (Berlin). 60(1):13-18, 1978.

The effects of citalopram, citalopram metabolites, and known thymoleptics on the uptake of tritiated 5-hydroxytryptamine (3H-5-HT) were investigated in a crude synaptosomal fraction of male Wistar rat brain. Citalopram and chlorimipramine inhibited 3H-5-HT uptake competitively and were equipotent. Compared with a series of tricyclic antidepressants, the two drugs were the most potent inhibitors of 3H-5-HT uptake (20-35 times more active than imipramine and amitriptyline). The metabolites of citalopram were also potent uptake inhibitors. When rats were treated orally with citalopram or chlorimipramine, the inhibition of 3H-5-HT uptake in synaptosomes was two times greater after citalopram than after chlorimipramine. Results are in agreement with those obtained using inhibition of 140-5-HT uptake in blood platelets or inhibition of drug induced 5-HT depletion in rat brain. 25 references. (Author abstract modified)

000184 Idowu, O. A.; Zar, M. A. Department of Pharmacological Sciences, Medical School, University of Newcastle upon Tyne, NE1 7RU, England **Effects of clonidine and noradrenaline on the release of (3H)-noradrenaline from the rat anococcygeus.** British Journal of Pharmacology (London). 63(2):342, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society in Guildford, England, the effects of clonidine and noradrenaline (NA) on the release of (3H)NA from the rat anococcygeus are reported. Unlabeled NA caused a dose-dependent rise in basal tritium efflux; stimulation-induced tritium efflux was unaffected by 0.1mcM NA but was abolished by 10mcM NA. Pretreatment with phentolamine (5mcM) did not antagonize the effects of NA on tritium efflux. Clonidine (1-10nM) inhibited the increase in tritium efflux evoked by short trains of electrical stimulation but exerted no effect on basal tritium efflux or on tritium efflux evoked by long trains of electrical stimulation. Phentolamine (5mcM) potentiated stimulation-induced tritium efflux and blocked the action of clonidine. Results indicate that clonidine inhibits the motor transmission in the anococcygeus through presynaptic mechanisms and is effective only at short train lengths of electrical stimulation. 3 references. (Author abstract modified)

000185 Jacquet, Yasuko F.; Klee, Werner A.; Smyth, Derek G. New York State Research Institute for Neurochemistry, Rockland Research Institute, Ward's Island, NY 10035 **Beta-endorphin: modulation of acute tolerance and antagonism by endogenous brain systems.** Brain Research (Amsterdam). 156(2):396-401, 1978.

The effects of beta-endorphin and rat brain extract on the electrically-stimulated guinea-pig ileum were investigated. Brain extract not only prevented the development of acute tolerance to repeated additions of beta-endorphin, but also antagonized the initial inhibitory action of beta-endorphin. None of the effects of the extract was blocked or reversed by naloxone. Maximal effects were observed with extract corresponding to only 1-2% of the material in a single rat brain. Thus, the central nervous system (CNS) appears to contain a potent endogenous mechanism that attenuates the occurrence of acute tolerance to the opiod neurohormone, as well as a mechanism that partially antagonizes its potent effects. These modulatory influences may explain in part how opioid peptides continue to exert neuromodulatory action without eliciting tolerance to their effects and how the CNS protects itself from the extreme effects of the potent neuropeptide. 15 references.

000186 Javaid, J. I.; Perel, J. M.; Davis, J. M. Illinois State Psychiatric Institute, 1601 W. Taylor, Chicago, IL 60612 **Inhibition of biogenic amines uptake by imipramine, desipramine, 2 OH-imipramine and 2 OH-desipramine in rat brain.** Life Sciences (Oxford). 24(1):21-28, 1978.

The relative abilities of the 2-hydroxy metabolites to block the reuptake of biogenic amines in purified synaptosomes isolated from rat brain were investigated. The tricyclic antidepressant imipramine and its metabolites desipramine, 2-hydroxyimipramine, and 2-hydroxydesipramine were all pharmacologically active in the central nervous system as determined by in vitro inhibition of biogenic uptake and their in vivo effect on spontaneous and forced motor activity. Since in vivo hydroxylation of both imipramine and desipramine produced compounds of similar pharmacological activity as the parent compounds, these results suggest that clinical studies relating plasma levels of tricyclic antidepressants to efficacy should also take into consideration the levels of hydroxylated metabolites. 21 references. (Author abstract)

000187 Jayasundar, S.; Vohra, M. M. Biological Laboratory and Animal House, Government Medical Stores Depot, Madras-600003, India **The metabolic pattern of spontaneously released (3H)norepinephrine in the presence of uptake inhibitors.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(2):202-205, 1978.

The effect of uptake inhibitors on the spontaneous release of (3H)norepinephrine ((3H)NE) was studied in rat isolated vas deferens with an efficient method for the separation of labelled NE and its five metabolites. Cocaine, desmethylimipramine, phenoxybenzamine, and guanethidine caused an increase in the spontaneous outflow of tritium, but did not alter the metabolic pattern of released (3H)NE. Bretylium caused an increase of both total tritium outflow and NE content. It is suggested that

these drugs caused release of NE from storage sites and that NE was metabolized within the nerve terminals before reaching the biophase. 13 references. (Author abstract modified)

000188 Johansson, O.; Hokfelt, T.; Elde, R. P.; Schultzberg, M.; Terenius, L. Department of Histology, Karolinska Institute, Stockholm, Sweden **Immunohistochemical distribution of enkephalin neurons.** Advances in Biochemical Psychopharmacology. 18:51-70, 1978.

The distribution and cellular localization of the enkephalins were examined in male rats and guinea-pigs, using immunohistochemical techniques. Enkephalin like immunoreactivity was widely distributed in neuronal systems in brain, spinal cord, and the periphery suggesting that the peptides are involved in many aspects of neural function. Enkephalin neurons were found in brain areas assumed to be related to pain and analgesia, including the periaqueductal gray, medullary raphe nuclei, spinal trigeminal nucleus, and spinal cord. A marked overlap between enkephalin positive nerve terminals and substance-P containing afferents was noted, suggesting that enkephalins may induce analgesia by stimulating presynaptic opiate receptors on substance-P containing primary afferents. The existence of enkephalin nerve terminals in the median eminence and hypothalamic enkephalin positive cell body groups suggests that a tuberoinfundibular enkephalin system may be involved in the hypothalamic control of pituitary hormone secretion. 82 references.

000189 Jones, R. S. G. Department of Physiology, University College, P.O. Box 78, Cardiff CF1 1XL, South Wales **Noradrenaline sensitive adenylate cyclase in rat cerebral cortex: effects of antidepressant drugs.** Neuropharmacology (Oxford). 17(9):771-774, 1978.

The effects of four antidepressant drugs on noradrenaline stimulated cyclic adenosine monophosphate (cAMP) formation were studied in homogenates of male Wistar rat cerebral cortex. Stimulated cAMP formation was enhanced by low doses and inhibited by high doses of imipramine, desipramine, and viloxazine. Iprindole, at all concentrations tested, enhanced stimulated cAMP formation. Basal levels of cAMP were unaffected by imipramine, viloxazine, or iprindole. Desipramine, at the highest concentration used, inhibited basal cAMP formation. 13 references. (Author abstract modified)

000190 Jope, R. S.; Weiler, M. H.; Jenden, D. J. Department of Pharmacology, School of Medicine, University of California, Los Angeles, CA 90024 **Regulation of acetylcholine synthesis: control of choline transport and acetylation in synaptosomes.** Journal of Neurochemistry (Oxford). 30(5):949-954, 1978.

The high affinity transport of choline (Ch) and the synthesis of acetylcholine (ACh) were measured in male Sprague-Dawley rat forebrain synaptosomes by measuring the utilization of (2H4)Ch. The synthesis of ACh was reduced under several conditions that reduced the availability of acetyl coenzyme A (no glucose added; replacement of glucose with succinate; or impairment of glucose utilization by bromopyruvate, sodium cyanide, or pentobarbital). These conditions did not reduce the amount of unacetylated (2H4)Ch in the synaptosomes, indicating that high affinity transport of Ch was not directly coupled to the synthesis of ACh. 30 references. (Author abstract)

000191 Jori, Armanda; Caccia, Silvio; Guiso, Giovanna; Garattini, Silvio. Istituto di Ricerche Farmacologiche "Mario Negri", Via Eritrea 62, I=20157 Milan, Italy **Distribution and localization of p-hydroxy-d-amphetamine in rat brain.** European Journal of Pharmacology (Amsterdam). 52(3/4):361-365, 1978.

The distribution and localization of the amphetamine metabolite p-hydroxyamphetamine (p-OHdA) in the striatum and brainstem were investigated in female rats. Results indicate that p-OHdA penetrates the blood/brain barrier poorly, when administered acutely or by repeated systemic treatments or when formed by biotransformation from administered d-amphetamine. p-OHdA accumulated more in and disappeared more rapidly from striatum than brainstem, suggesting that p-OHdA may be stored in two different compartments. p-OHdA accumulated much less in the striatum of 6-hydroxydopamine (6-OHDA) treated rats than in controls. Treatment with 6-OHDA also prevented p-OHdA accumulation in the striatum after repeated d-amphetamine administrations. The accumulation of p-OHdA in brainstem was not affected by 6-OHDA treatment. Results indicate that p-OHdA tends to accumulate in dopaminergic rather than noradrenergic structures. 23 references. (Author abstract modified)

000192 Juorio, Augusto V.; Danielson, Terry J. Psychiatric Research Division, University Hospital, Saskatoon, Saskatchewan S7N OW8, Canada **Effect of haloperidol and d-amphetamine on cerebral tyramine and octopamine levels.** European Journal of Pharmacology (Amsterdam). 50(1):79-82, 1978.

Intraperitoneal administration of d-amphetamine or haloperidol produced a marked reduction of p-tyramine concentrations in the striatum but not in the mesolimbic system of male Wistar rats. However, the administration of d-amphetamine in haloperidol pretreated animals produced a marked reduction in p-tyramine levels and a marked increase in m-tyramine levels in both brain regions. Hypothalamic p-octapine levels were reduced by d-amphetamine, but not by haloperidol; d-amphetamine administered to haloperidol pretreated rats produced a reduction in hypothalamic p-octapine similar to that produced by d-amphetamine alone. 10 references. (Author abstract modified)

000193 Kaiman, M.; Shibata, S. Dept. of Pharmacology, John A. Burns School of Medicine, University of Hawaii, Honolulu, HI 96822 **Calcium influx and spontaneous phasic contractions of portal veins after treatment with reserpine, 6-hydroxydopamine, and cocaine.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(2):199-201, 1978.

The relationship between changes in spontaneous phasic contractions (SPC) and alterations in the magnitude of 45calcium (45Ca) influx in portal veins from rat, rabbit, and guinea pig treated with reserpine, 6-hydroxydopamine (6-OHDA), and cocaine was examined. Reserpine treatment increased the amplitude of the SPC of portal veins from rabbit and guinea pig but did not alter that of rat. The amplitude of the SPC of portal veins from these animals was increased after 6-OHDA but was not changed after cocaine treatment. Reserpine induced and 6-OHDA, induced changes in portal vein SPC amplitude were accompanied by an increase in 45Ca influx. Results indicate that the elevation in SPC amplitude is accompanied by an increase in calcium influx. 9 references. (Author abstract)

000194 Kamikawa, Yuichiro; Shimo, Yasuo. Department of Pharmacology, Dokkyo University School of Medicine, Mibumachi, Tochigi 321-02, Japan **Antagonistic effect of compound 48/80 on the inhibitory actions of morphine and methionine-enkephalin on electrically-induced contractions of the guinea-pig ileum.** British Journal of Pharmacology (London). 64(4):511-518, 1978.

Compound 48/80 (3-30mcg/ml), a condensation product of p-methoxyphenethylmethylamine and formaldehyde, antagonized the inhibitory effects of morphine and methionine-enkephalin on the electrically induced twitch like contractions of the longitudinal muscle of guinea-pig ileum. The antagonism was not affected by pretreatment with the antihistaminics, chlorpheniramine

and metiamide. The inhibitory effects of noradrenaline and adrenaline on the twitches were slightly but significantly increased by the presence of compound 48/80, but that of adenosine triphosphate was not modified. Results indicate that compound 48/80 acts as a selective and competitive antagonist at opiate receptors in the intramural cholinergic nerves of guinea-pig ileum. 27 references. (Author abstract modified)

000195 Kaneno, Shigeru; Watanabe, Shuzo; Toru, Michio; Shimazono, Yasuo. Dept. of Neuropsychiatry, Tokyo Medical and Dental University, Bunkyo-ku, Tokyo 113, Japan **Different dopamine stimulation of adenylate cyclase in striatum and mesolimbic area of rats treated with chronic chlorpromazine.** Brain Research (Amsterdam). 152(2):396-400, 1978.

Dopamine (DA) stimulation of adenylate cyclase (ACase) activity was studied in several rat brain regions innervated by dopaminergic neurons after an acute or chronic treatment of chlorpromazine (CP) in order to delineate the brain sites where antipsychotic drugs may act. In the acute experiment, DA stimulation in the striatum and the septal area N.accumbens was significantly inhibited by CP as compared with the promethazine (PM) control. Acute treatment of CP failed to inhibit DA stimulation of ACase in other brain areas. Repeated CP treatment for 14 days increased DA stimulation of ACase activity in the rat striatum 1 week after the last injection. It is suggested that the enhanced responsiveness of the striatal DA-ACase of the chronically treated rats might be a model of clinically observed tardive dyskinesia. The results indicate that the mesolimbic area is one of the possible sites where CP exerts an antipsychotic action by antagonizing dopaminergic activity. 10 references.

000196 Kanof, Philip D.; Greengard, Paul. Department of Pharmacology, Yale University School of Medicine, New Haven, CT 06510 **Brain histamine receptors as targets for antidepressant drugs.** Nature (London). 272(5651):329-333, 1978.

The interactions of various classes of drugs which have antidepressant properties with histaminergic systems in the mammalian brain were examined. It is reported that the classical tricyclic antidepresant drugs, as well as the atypical antidepressant drugs iprindole and mianserin, and even certain phenothiazine and thiozanthene derivatives that possess antidepressant properties, are all potent antagonists of the activation of brain adenylate cyclase by histamine. The calculated inhibition constants of several antipsychotic drugs and related compound for histamine sensitive adenylate cyclase activity in guinea-pigs are included. Data indicate that a large number of drugs of chemically diverse structures, all of which possess clinical antidepressant properties, are also potent inhibitors of histamine sensitive adenylate cyclase in preparations from guinea-pig hippocampus and neocortex. It is suggested that blockage of histamine sensitive adenylate cyclase may contribute to the antidepressant actions of these compounds. 74 references.

000197 Kantak, K. M.; Wayner, M. J.; Stein, J. M. Laboratory of Behavioral Neurochemistry, Waisman Center, Room 609, University of Wisconsin, 1500 Highland Avenue, Madison, WI 53706 **Effects of various periods of food deprivation on serotonin turnover in the lateral hypothalamus.** Pharmacology Biochemistry and Behavior. 9(4):529-534, 1978.

The effects of food deprivation for 24, 48, or 72 hours on serotonin (5-HT) turnover in the lateral hypothalamus were investigated in male hooded rats. One hour after an infusion of tritiated 5-HT, the lateral hypothalamus was perfused with physiological bacteriostatic saline for 40 minutes. Samples of perfusate were analyzed by thin layer chromatography for estimates of tritium labeled precursor and metabolites. Results indicate that 5-HT turnover was enhanced as a function of hours of food deprivation. 18 references. (Author abstract modified)

000198 Kawa, Akira; Taniguchi, Yoshiyasu; Mizuguchi, Katsumi; Ryu, Seiichiro; Ariyama, Takao; Kamisaki, Takeshi; Koreeda, Fumio; Kanehisa, Takuya. First Department of Internal Medicine, Kagoshima University Medical School, Kagoshima 890, Japan **Effects of intraventricular administration of noradrenaline and dopamine on the levels of corticosterone in rats and denervation hypersensitivity resulting from intraventricular administration of 6-hydroxydopamine.** Life Sciences. 23(9):991-998, 1978.

The effects of intraventricular administration of noradrenaline (NA) on the resting levels, stress induced rises, and dexamethasone induced decreases of plasma corticosterone (B) were studied in male Wistar rats. Administration of 1.0microg NA did not cause a decrease in plasma B concentrations, but 10microg NA produced a rise in plasma B levels. The stimulating action of centrally administered NA was more marked when preinjection concentrations of plasma B were lower. Pretreatment with intraventricular 6-hydroxydopamine (6-OHDA) facilitated the action of intraventricular NA in the regulation of pituitary/adrenocortical function, suggesting the development of denervation hypersensitivity in response to 6-OHDA. Intraventricular administration of NA did not block stress induced rises in plasma B levels, but counteracted dexamethasone induced decrements in plasma B. Intraventricular administration of 1.0microg dopamine caused no change in the concentrations of plasms B in control or 6-OHDA treated rats. 18 references. (Author abstract modified)

000199 Kebabian, John W. Biochemical Neuropharmacology Unit, Experimental Therapeutics Branch, NINCDS, NIH, Bethesda, MD 20014 **Multiple classes of dopamine receptors in mammalian central nervous system: the involvement of dopamine-sensitive adenylyl cyclase.** Life Sciences (Oxford). 23(5):479-483, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, two classes of dopamine receptor mechanisms are defined according to their association with, or independence from, a dopamine adenylyl cyclase. Dopamine receptors unrelated to adenylyl cyclase are designated type alpha, and those linked to adenylyl cyclase are designated type beta. The dopamine ergots (lisuride, lergotrile, and bromocriptine) and their antagonists (metoclopramide) are relatively specific for the alpha-dopaminergic receptor in the anterior pituitary. Other antagonists (such as apomorphine and dopamine) and antagonists (such as antipsychotic phenothiazines and butyrophenones) affect both classes of receptor. 33 references. (Author abstract modified)

000200 Kehr, W.; Halbhubner, K.; Loos, D.; Herken, H. Forschungslaboratorien der Schering AC Berlin/Bergkamen, Mullerstrasse 170-178, D-1000 Berlin 65, Federal Republic of Germany **Impaired dopamine function and muscular rigidity induced by 6-aminonicotinamide in rats.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(3):317-319, 1978.

Intraperitoneal administration of 10mg/kg 6-aminonicotinamide (6-AN) in male Wistar rats lowered the concentration of dopamine and markedly reduced the disappearance of dopamine after synthesis inhibition with alpha-methyl-p-tyrosine in corpus striatum. In the dopamine rich part of the limbic system, the formation of DOPA after decarboxylase inhibition with 3-hydroxybenzylhydrazine was decreased by 6-AN. In diencephalon, 6-AN altered neither the steady state level nor the utilization of noradrenaline. Results suggest that the muscular rigidity induced by 6-AN may be associated with disruption of dopaminergic transmission. 14 references. (Author abstract modified)

000201 Kelley, Ann E.; Iversen, Susan D. Department of Experimental Psychology, University of Cambridge, Downing Street, Cambridge CB2 3EB, England **Behavioral response to bilateral injections of substance P into the substantia nigra of the rat.** Brain Research (Amsterdam). 158(2):474-478, 1978.

The behavioral effects of bilateral injections of substance P (SP) into the substantia nigra were investigated in male Sprague-Dawley rats. Five injections of SP were given, the first four at 2 day intervals and the fifth a week after the fourth. The first SP injection elicited a pronounced increase in whole body locomotor activity. The second injection also significantly enhanced locomotor activity, but to a lesser degree. After the third and fourth injections, locomotor activity of SP treated animals was similar to that of saline treated controls. However, the third and fourth injections of SP stimulated a strong tendency to groom, although no change in grooming behavior was seen after the first two injections. Enhanced grooming was also observed after the fifth injection. Both behavioral effects of SP injections were of short duration. It is suggested that intranigral injection of SP elicits behavioral activation by stimulating dopaminergic activity in the striatum. 27 references.

000202 Kerwin, R.; Pycock, C. Department of Pharmacology, University of Bristol Medical School, Bristol BS8 1TD, England **Baclofen enchances (3H)-GABA release from rat globus pallidus in vitro.** British Journal of Pharmacology (London). 63(2):388-389, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society in Guildford, England, the effects of baclofen on tritiated gamma-aminobutyric acid (GABA) release from rat globus pallidus in vitro were reported. Baclofen (400mcM) significantly increasd the spontaneous or aminocyclohexane carboxylic acid-induced efflux of (3H)GABA. Baclofen also enhanced the efflux of (3H)8beta-alanine and (3H)diaminobutyric acid. Baclofen appeared to enhance GABA efflux in a specific manner unrelated to its direct neuronal depressant action. 6 references. (Author abstract modified)

000203 Kerwin, R.; Pycock, C. Department of Pharmacology, Medical School, University of Bristol, Bristol, BS8 1TD, England **Baclofen (beta-p-chlorophenyl-gamma-aminobutyric acid) enhances (3H)gamma-aminobutyric acid (3H-GABA) release from rat globus pallidus in vitro.** Journal of Pharmacy and Pharmacology (London). 30(10):622-627, 1978.

Racemic baclofen (300mcM-1mM) significantly enhanced the release of radioactivity from superfused slices of female Porton rat globus pallidus prelabeled with tritiated gamma-aminobutyric acid (GABA) in vitro. This releasing action was specific to the ()-isomer of baclofen; neither (-)-baclofen nor DL-alpha-epsilon-diaminopimelic acid had any significant effect. The releasing effect of baclofen appeared unrelated to the phenethylamine moiety of its structure, since neither beta-phenethylamine nor dopamine evoked release of (3H)GABA from pallidal slices. Baclofen increased the efflux of radioactivity from pallidal slices prelabeled with either (3H)beta-alanine or (3H)diaminobutyric acid in vitro. The use of the specific glial and neuronal GABA uptake blocking compounds beta-alanine and beta-alanine and (plus or minus)-cis-1,3-aminocyclohexanecarboxylic acid did not reveal a preference for glial or neuronal elements. It is suggested that the GABA mimetic properties of baclofen may be related to the ()-isomer, while nonspecific neuronal depressant actions are an effect of the (-)-isomer. The potential of the ()-baclofen as an antipsychotic agent and of (-)-baclofen as an antispastic drug is discussed. 29 references. (Author abstract modified)

000204 Key, B. J.; Krzywosinski, L. Dept. of Pharmacology, Medical School, University of Birmingham, Birmingham B15 2TJ, England **Comparison of the electrocortical changes induced by ()-amphetamine and chlorpromazine when perfused directly into the dorsal raphe nucleus of the cat.** British Journal of Pharmacology (London). 63(4):599-608, 1978.

The electrocortical changes induced by ()-amphetamine and chlorpromazine when perfused directly into the dorsal raphe nucleus of the cat were studied. ()-Amphetamine mimicked the intermittent and sustained electrocortical desynchronization produced by (-)-noradrenaline (NA) when perfused directly into the dorsal raphe nucleus of cat encephale isole preparations. The effects of amphetamine or NA were abolished or significantly attenuated by prior app'ication of (-)-propranolol. The effect of amphetamine, but not that of NA was blocked by prior applications of guanethidine or chlorpromazine (CPZ). Desmethylimipramine (DMI) produced dose related changes in electrocortical activity which were similar to those induced by NA when applied to the same sites within the dorsal raphe nucleus. DMI potentiated the effects of both amphetamine and NA, but guanethidine only abolished the DMI-induced potentiation of the amphetamine response. (-)-Propranolol, guanethidine, and CPZ produced a short period of electrocortical desynchronization at the beginning of the perfusion period before antagonism of the amphetamine response was apparent. Results suggest that CPZ and amphetamine have an action within the dorsal raphe nucleus possibly related to noradrenergic terminals. 36 references. (Author abstract)

000205 Kirby, Margaret L. Dept. of Anatomy, Medical College of Georgia, Augusta, GA 30902 **Drug modification of catecholamine synthesis and uptake in early chick embryos.** Brain Research (Amsterdam). 149(2):443-451, 1978.

The source of catecholamines in the primary trunks in chick embryo was studied using alpha-methyl-p-tyrosine (AMT) to block synthesis and desmethylimipramine (DMI) to block uptake. Only embryos treated with both AMT and DMI showed an absence of fluorescence in the primary trunks. However, radioisotopic-enzymatic measurements of catecholamines in whole embryos revealed that epinephrine and norepinephrine were depleted by AMT alone. This indicates that the catecholamines in the primary trunks are synthesized rather than taken up from the yolk. Depletion of the catecholamines in the primary trunks did not cause any developmental aberration in either the primary or secondary sympathetic trunks, which may indicate that catecholamines are not necessary for the development of the trunks, or may be attributed to alpha-methylnorepinephrine, which was present in AMT-treated embryos. Blocking uptake alone caused large increases in both epinephrine and norepinephrine. Since these increases were blocked by AMT, they are believed to be due to increased tyrosine hydroxylase activity. This may indicate that there is end product regulation of tyrosine hydroxylase in the developing primary sympathetic trunks similar to that reported in adults. 24 references. (Author abstract modified)

000206 Kleinrok, Zdzislaw; Czajka, Ryszard. Department of Pharmacology, Institute of Clinical Pathology, School of Medicine, Lublin, Poland **The effect of endogenous and exogenous GABA on the lever and turnover of noradrenaline and dopamine in the rat brain.** Acta Physiologica Polonica (Warszawa). 29(2):117-121, 1978.

The effect of endogenous and exogenous GABA on the level and turnover of noradrenaline and dopamine in rat brain was examined. GABA administered to the lateral ventricle of the rat brain in doses of 200 and 600 micrograms decreased the level of noradrenaline and had no effect on dopamine level. A similar

effect was obtained after raising the level of endogenous GABA in the brain by means of intraperitoneal hydroxylamine in doses of 50 and 75mg/kg. It is also reported that GABA given i.v.c. in a dose of 600mg/kg reduces the turnover of dopamine in the brain. It is concluded that the mechanism of GABA's central action may be connected with its direct action on the corresponding brain structures and/or its indirect action on brain dopamine level and dopamine turnover. 12 references. (Author abstract modified)

000207 Kolb, Vera M. Department of Chemistry and Biochemistry, Southern Illinois University, Carbondale, IL 62901 **New opiate-receptor model.** Journal of Pharmaceutical Sciences. 67(7):999-1002, 1978.

A new opiate receptor model is proposed in which only one conformation of the receptor is needed for binding of both agonists and antagonists. There are two different spacially-fixed amine-binding sites in this model, one agonist and one antagonist. The opiates undergo binding to their amine binding-sites via the lone electron pair on nitrogen. The role of the N-allyl or other such group in impairing antagonist properties is explained in terms of the steric requirements of this group. For this group to be accommodated without imposing severe steric interactions in the rest of the opiate molecule, the piperidine ring must assume a flexible (skew boat) conformation; in this conformation, the N-lone-pair electron lobe assumes the characteristic directionality of an antagonist toward its amine-binding site. If the N-lone-pair lobe is not rigorously maintained in this direction, the opiate molecule assumes both antagonist and agonist conformations and mixed agonist/antagonist activity is observed. 13 references. (Author abstract modified)

000208 Komiskey, H. L.; Hsu, F. L.; Bossart, F. J.; Fowble, J. W.; Miller, D. D.; Patil, P. N. Division of Pharmacology, College of Pharmacy, Ohio State University, Columbus, OH 43210 **Inhibition of synaptosomal uptake of norepinephrine and dopamine by conformationally restricted sympathomimetic amines.** European Journal of Pharmacology (Amsterdam). 52(1):37-45, 1978.

The conformationally restricted cis and trans isomers of substituted cyclobutanes were examined for their ability to inhibit tritiated norepinephrine (3H-NE) and dopamine (3H-DA) accumulation by synaptosomes prepared from the male Sprague-Dawley rat cortex and corpus striatum, respectively. The drugs were more effective in preventing the accumulation of 3H-NE by cortical synaptosomes than 3H-DA by striatal synaptosomes. The trans isomers were more potent inhibitors of accumulation than cis isomers in both regions. The greatest stereospecificity was exhibited by the isomers of 2-amino-1-phenylcyclobutanol; the trans isomer inhibited 3H-NE accumulation in cortical synaptosomes and 3H-DA accumulation in striatal synaptosomes, while the cis isomer was inactive. When the releasing capabilities of the restricted analogs were determined by superfusing cortical and striatal synaptosomes labeled in vitro with tritiated catecholamines, the trans and cis isomers elicited an insignificant release of 3H-NE and 3H-DA. Results indicate that the decreased synaptosomal accumulation of tritiated catecholamines caused by the analogs was due mainly to inhibition of uptake. The influence of dihydral angle between phenyl-NH2 on the inhibition of uptake is discussed. It is concluded that the anti conformation of sympathomimetic amines is the preferred conformation at the noradrenergic amine pump. 20 references. (Author abstract modified)

000209 Kondo, Yasuro; Iwatsubo, Katsuya. Department of Pharmacology, Osaka University Dental School, Kitaku, Osaka 530, Japan **Increased release of preloaded (3H)GABA from substantia nigra in vivo following stimulation of caudate nucleus and globus pallidus.** Brain Research (Amsterdam). 154(2):395-400, 1978.

The effects of electrical stimulation of the caudate nucleus and globus pallidus of the anesthetized rat on levels of preloaded radiolabeled gamma-aminobutyric acid (GABA) in the substantia nigra were studied. Radioactive GABA was introduced in vivo in the perfusate. Stimulation of the caudate nucleus and globus pallidus increased the levels of radioactive GABA, which was then collected from push/pull cannulae placed in the substantia nigra. Glial and neuronal uptake of GABA was prevented by the introduction of inhibitors, beta-alanine and aminooxy acetic acid. Cis-3-Aminocyclohexanecarboxylic acid in the perfusate stimulated the release of radiolabeled GABA from the substantia nigra. Picrotoxin, which is known to block GABA receptors, caused an increase in GABA release from the substantia nigra. 28 references.

000210 Konishi, Masaharu. Shionogi Research Laboratory, Shionogi & Co. Ltd., Fukushima-ku, Osaka, 553, Japan **Dose-dependent pharmacokinetics of 7-chloro-1,3-dihydro-5-(2'-chlorophenyl)-2H-1,4-benzodiazepi in-2-one in dogs.** Journal of Pharmaceutical Sciences. 67(12):1777-1778, 1978.

A nonlinear pharmacokinetic model to explain the dose dependent plasma concentration/time curve of 7-chloro-1,3-dihydro-5-(2'-chlorophenyl)-2H-1,4-benzodiazepin-2-one (chlorodesmethyldiazepam) is described. The most simplified model for the plasma concentrations/time curves is elaborated on the assumptions that enterohepatic circulation of the compound and its glucuronide is negligible and that enzymes concerned with the compound's metabolism have the same enzyme constants. Pharmacokinetic studies of chlorodesmethldiazepam in dogs indicate that the plasma decline of the compound obeys the two compartment model. 3 references.

000211 Kosterlitz, H. W.; Leslie, Frances M. Unit for Research on Addictive Drugs, University of Aberdeen, Aberdeen Scotland **Comparison of the receptor binding characteristics of opiate agonists interacting with mu- or kappa-receptors.** British Journal of Pharmacology (London). 64(4):607-614, 1978.

The receptor binding characteristics of various morphine like and ketazocine like opiate agonists were measured by inhibition of tritiated naloxone binding in homogenates of brain and of ileal myenteric plexus longitudinal muscle of the guinea-pig. No differences were found for the two tissues. The depressant effect of sodium on the inhibition of (3H)naloxone binding by opiate agonists varied widely and the relationship between sodium ion concentration and inhibition of binding was nonlinear. The sodium shift of ketazocine like agonists was lower than that of morphine like agonists but higher than that of opiates with dual agonist and antagonist action, suggesting that the kappa-receptors for the ketazocine like drugs are less susceptible to the sodium effect than are the mu-receptors for morphine like drugs. For most of the morphine like drugs, but not for the ketazocine like agonists, a good correlation was found between pharmacological activity in the myenteric plexus longitudinal muscle preparation and the inhibition of binding of (3H)naloxone at a sodium ion concentration of 12mM. 24 references. (Author abstract modified)

000212 Kruk, Z. L.; Zarrindast, M. R. Department of Pharmacology and Therapeutics, London Hospital Medical College, Turner Street, London E1 2AD England **Effects of morphine on uptake and release of dopamine in mouse and rat striatal synaptosomes.** British Journal of Pharmacology (London). 63(2):386, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society in Guildford, England, the effects of

morphine on uptake and release of dopamine (DA) in mouse and rat striatal synaptosomes were reported. Morphine did not significantly affect the spontaneous or amphetamine-induced uptake or release of (3H) DA in these preparations. These results do not support the hypothesis that morphine has a direct presynaptic action at DA nerve terminals in mouse and rat striatum. 7 references. (Author abstract modified)

000213 Kuczenski, R. Department of Pharmacology, Vanderbilt University, Nashville, TN 37217 **Lack of effect of gamma-butyrolactone on amphetamine-induced decrease in striatal synaptosomal dopamine synthesis.** Journal of Neurochemistry (Oxford). 31(1):347-349, 1978.

The effects of gamma-butyrolactone (GBL) on the amphetamine-induced decrease and the haloperidol-induced increase in striatal synaptosomal dopamine (DA) synthesis were investigated in male Sprague-Dawley rats. Pretreatment with 600mg/kg GBL 10 minutes prior to the administration of haloperidol completely blocked the haloperidol-induced increase in striatal synaptosomal DA synthesis. The amphetamine-induced decrease in synaptosomal DA synthesis, however, was not affected by GBL pretreatment. Results suggest that the amphetamine-induced decrease in striatal DA synthesis is not strictly mediated by drug-induced inhibition of neuronal firing. 19 references.

000214 Kuhn, Cynthia M.; Schanberg, Saul M. Department of Pharmacology, Duke University Medical Center, Durham, NC 27710 **Metabolism of amphetamine after acute and chronic administration to the rat.** Journal of Pharmacology and Experimental Therapeutics. 207(2):544-554, 1978.

The distribution of amphetamine (AMPH) and its hydroxylated metabolites p-hydroxyamphetamine (POHA), p-hydroxynorephedrine (POHNOR), and p-hydroxyamphetamine glucuronide (POHAG) in various tissues was studied after acute and chronic administration of AMPH to male Sprague-Dawley rats. After intraperitoneal administration of a single dose of tritiated AMPH, (3H)AMPH tissue levels increased rapidly to a maximum within 15 to 20 minutes and then declined biphasically. Tissue (3H)POHA levels and liver (3H)POHAG levels also increased rapidly and then declined exponentially, while tissue (3H)POHNOR increased gradually and declined with a half-life of 18 to 24 hours. The distribution of (3H)AMPH and its tritiated metabolites after a single dose of (3H)AMPH changed significantly after chronic AMPH administration. (3H)AMPH tissue content, 30 minutes after (3H)AMPH administration, was significantly greater in chronically treated animals than in controls. The disappearance of (3H)POHA from liver and of (3H)POHNOR from heart was accelerated and the disappearance of (3H)POHAG from liver was slowed in chronically treated animals, while the half-life of (3H)AMPH was unchanged. Tissue content of AMPH and POHNOR 12 hours after the last of 6 doses of AMPH was significantly greater than after a single dose. Results suggest that the changes in the distribution of AMPH and its active metabolites that occur during chronic AMPH administration may be involved in the altered behavioral response to AMPH observed during chronic administration. 52 references. (Author abstract modified)

000215 Larson, Alice A.; Takemori, A. E. Department of Pharmacology, University of Illinois, College of Medicine, Chicago, IL 60612 **Effect of morphine on the fate of newly transported tryptophan and 5-hydroxytryptophan in brain of rats.** Journal of Pharmacology and Experimental Therapeutics. 205(2):265-273, 1978.

The uptake of radiolabeled tryptophan and 5-hydroxytryptophan (5-HTP) by the brain and their conversion to serotonin were measured in morphine treated male Sprague-Dawley rats after injection of the tracers into the carotid artery. Uptake of tryptophan by the brain decreased after a single dose of morphine, while that of 5-HTP increased; conversion of both tryptophan and 5-HTP to serotonin increased. A single dose of morphine also decreased the incorporation of tryptophan into brainstem proteins. After the implantation of morphine pellets for 72 hours, the conversion of tryptophan to serotonin was not different from control, while that of 5-HTP to serotonin remained elevated. In rats pretreated with pargyline prior to injection of radiolabeled tryptophan or 5-HTP, the total accumulated radioactivity in brain was significantly higher in morphine tolerant rats than in controls. However, the level of total accumulated serotonin in these rats was not significantly increased. Results suggest that an increase in the rate of synthesis of serotonin after a single dose of morphine may be caused by an increased uptake of 5-HTP and increased conversion of 5-HTP and tryptophan to serotonin. The increased availability of tryptophan may be a result of morphine induced inhibition of protein synthesis in the brainstem. 37 references. (Author abstract modified)

000216 Leite, Jose Roberto; Rodriguez de Lores Arnaiz, Georgina. Departamento de Psicobiologia Escola Paulista de Medicina, Rua Botucatu, 862 - Sao Paulo, Brasil **Effect of chronic administration and withdrawal of sodium barbitone on protein synthesis of rat brain.** Pharmacology Biochemistry and Behavior. 8(4):323-326, 1978.

The effects of chronic administration of sodium barbitone solution and of its withdrawal were studied on protein synthesis in the cerebral cortex of rats. After chronic administration of sodium barbitone, a marked increase of radiolabeled leucine into isolated nerve endings was observed. Withdrawal of the drug resulted in a decreased incorporation with respect to values obtained during chronic administration of the drug. However, chronic administration of the barbiturate produced a decreased incorporation in mitochondrial and microsomal fractions. The results are discussed in relation to the development of tolerance and of the abstinence syndrome to this drug. 22 references. (Author abstract modified)

000217 Levitan, Irwin B. Friedrich Miescher-Institut, P.O. Box 273, CH-4002, Basel, Switzerland **Adenylate cyclase in isolated Helix and Aplysia neuronal cell bodies: stimulation by serotonin and peptide-containing extract.** Brain Research (Amsterdam). 154(2):404-408, 1978.

Cyclic nucleotide metabolism was studied in neurons of the marine snail Aplysia californica and the land snail Helix pomatia. Pooled Aplysia or Helix neuronal cell bodies were homogenized and adenylate cyclase activity was assayed. Enzyme activity was detectable in membranes from all cells examined. The basal adenylate cyclase activity was stimulated by both Aplysia and Helix peptide containing extract. Serotonin also stimulated adenylate cyclase; this stimulation could be blocked by D-lysergic acid diethylamide (D-LSD), but not by its stereoisomer. Although there are no synaptic connections on the cell bodies of molluscan neurons, there do appear to be some receptors which can respond to the application of putative neurotransmitters, including dopamine, serotonin, and acetylcholine. The results suggest that some adenylate cyclase linked receptors for serotonin and for the active component in the peptide containing extract are also present on Helix and Aplysia neuronal cell bodies. 35 references.

000218 Leysen, J. E.; Gommeren, W. Department of Biochemical Pharmacology, Janssen Pharmaceutica Research Laboratories, B-2340 Beerse, Belgium **Different kinetic properties of neuroleptic receptor binding in the rat striatum and frontal cortex.** Life Sciences (Oxford). 23(5):447-452, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, kinetic properties of neuroleptic receptor binding in male Wistar rat striatum and frontal cortex are described. In the striatum, 3H-spiperone binding was found to be 80% stereospecific and 6% nonspecific. Stereospecific sites accounted for 60% of total binding and nonstereospecific sites for 25% of binding in frontal cortex. Stereospecific sites were dopaminergic in the striatum and serotonergic in the frontal cortex. The nonstereospecific sites were saturable and could only be detected by the use of appropriate blanks. Release experiments revealed positive cooperative effects in the dissociation of spiperone from striatal receptors, but this was not detectable in frontal cortex. In both brain regions, a rapidly and a slowly dissociating component were observed. The rapid component in frontal cortex was ascribed to the dissociation of spiperone from the stereospecific sites and the slow component to the dissociation from nonstereospecific sites. 3 references. (Author abstract modified)

000219 Leysen, J. E.; Laduron, P. M. Dept. of Pharmacology, Janssen Pharmaceutica Research Labs., B-2340 Beerse, Belgium **A serotonergic component of neuroleptic receptors.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 230(2):337-339, 1978.

Two different populations of neuroleptic receptors have been shown to exist in the rat brain: frontal cortical receptors appear to be predominantly serotonergic whereas the striatal ones are mainly dopaminergic. In a series of amine agonists, the serotonin-likecompounds (bufotenin, serotonin, tryptamine) were more active than dopaminergic agents in the frontal cortex, where the reverse was true in the striatum. Serotonin antagonists were up to 50 times more potent in inhibiting 3H-spiperone binding in the frontal cortex than in inhibiting 3H-haloperidol binding in the striatum. When a large series of neuroleptics were tested, three distinct types were found: some showed a much higher affinity for frontal cortical than for striatal receptors (pipamperone), others displayed a high affinity for both receptors (spiperone), while compounds known as specific dopamine blockers (pimozide) were much more active in the striatal binding test than in the one in the frontal cortex. It is concluded that the receptor populations in both regions are kinetically heterogeneous. 13 references.

000220 Lindeke, B.; Cho, A. K.; Jonsson, U.; Paulsen, U. Department of Organic Pharmaceutical Chemistry, Biomedical Center, University of Uppsala, Box 574, S-751 23 Uppsala, Sweden **On the chemical stability of beta-hydroxyphenylalkylhydroxylamines and its relevance to the metabolism of amphetamines and ephedrines.** Life Sciences. 23(9):921-926, 1978.

The chemical reactivity of beta,N-bis(hydroxy)phenylalkylamines was characterized in relation o the metabolism of amphetamines and ephedrines. Results indicate that the compounds undergo rapid oxidative decomposition to benzaldehyde and an oxime in the presence of small quantities of cupric ions. The reaction occurs in aqueous solution at pH 7.4, so that products of metabolic transformation reactions involving the oxidation of such hydroxylamines would be expected to decompose in this way. N-oxidation of norephedrine would result in benzaldehyde by this mechanism. Since benzaldehyde is a precursor to benzoic acid, it is proposed that the N-hydroxylation pathway of arylalkylamine metabolism, instead of carbon oxidation, could lead to benzoic acid. This acid is a major metabolite of amphetamine and ephedrine in some species. 30 references. (Author abstract modified)

000221 Lokiec, F.; Rapin, J. R.; Jacquot, C.; Cohen Y. Laboratoire de Pharmacodynamie (ERA CNRS 627), Faculte de Pharmacie, F-92290 Chatenay-Malabry, France **A comparison of the kinetics of d- and l-amphetamine in the brain of isolated and aggregated rats.** Psychopharmacology (Berlin). 58(1):73-77, 1978.

The kinetics of d- and l-amphetamine were investigated in isolated and aggregated male rats. Determination of drug concentrations in rat brain areas following injection of 15mg/kg of d- or l-(14) C-amphetamine showed that there was no difference in the half-lives of the two isomers in the brain areas of isolated rats, with the elimination curves being monoexponential. In aggregated rats, d-amphetamine was eliminated from the striatum and hippocampus as a biexponential function, and l-amphetamine elimination was biphasic only in the striatum. In other brain regions both d- and l-amphetamine were eliminated as a monoexponential function. The half-lives of d-amphetamine in different brain areas were, however, shorter than those of the l-isomer. The observed differences between d- and l-amphetamine kinetics in brain areas of isolated and aggregated rats may explain certain aspects of the pharmacological activities of these drugs. 25 references. (Author abstract modified)

000222 Longo, V. G.; Loizzo, A. Laboratorio di Farmacologia, Istituto Superiore di Sanita, Rome, Italy **Evaluation of the central effects of ergot alkaloids by means of electroencephalography.** Pharmacology (Basel). 16(Suppl. 1):189-192, 1978.

The effects of some ergot derivatives on the electroencephalogram and behavior of laboratory animals (mice, rats, rabbits) are surveyed. The interference of bromocriptine on the dopaminergic central systems was studied using behavioral (interference with the effects induced by L-dopa, 5HT, TRF, or neuroleptic drugs) and electrophysiological (EEG) methods. While no clear effects of bromocriptine could be evidenced in mice, EEG recordings from the dorsal hippocampus of the rabbit show a slight disruption of theta waves after administration of 2mg//kg i.v. of the drug or more. 14 references. (Author abstract)

000223 Lu, L. J. Wang; Demetriou, S. K.; Domino, E. F. Department of Pharmacology, Baylor College of Medicine, Houston, TX 77030 **Effects of various neuroleptics, phenobarbital and SKF 525-A on dimethyltryptamine content in rat brain and liver.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 232(1):117-133, 1978.

The content of N,N-dimethyltryptamine (DMT) in the brain and liver of adult male rats was determined after treatment with chlorpromazine, haloperidol, thiothixene, octoclothepin, methiothepin, molindone, phenobarbital, and SKF-525-A. Neuroleptics varied markedly in the ability to alter DMT content. Brain DMT content was increased by chlorpromazine and molindone and was decreased by octoclothepin, haloperidol, and methiothepin, in descending order of potency. DMT liver content was elevated by chlorpromazine, haloperidol, molindone, and methiothepin, in descending order of potency; methiothepin and octochlothepin had biphasic effects in the liver. In general, the indoleacetic acid level was not markedly affected. Chronic phenobarbital lowered brain DMT and SKF-525-A pretreatment elevated brain and liver DMT levels. 21 references. (Author abstract modified)

000224 Lund, Donald D.; Knuepfer, Mark M.; Brody, Michael J.; Bhatnagar, Ranbir K.; Schmid, Phillip G.; Roskoski, Robert, Jr. Department of Biochemistry, University of Iowa, Iowa City, IA 52242 **Comparison of tyrosine hydroxylase and choline acetyltransferase activity in response to sympathetic nervous system activation.** Brain Research (Amsterdam). 156(1):192-197, 1978.

The effect of sympathetic nervous system activation induced by reserpine, cold stress, or electrical stimulation of the hypo-

thalamus on tyrosine hydroxylase and choline acetyltransferase activity was investigated in male Sprague-Dawley rats. Reserpine and cold stress both produced an increase in tyrosine hydroxylase activity in the adrenal gland and stellate ganglia but did not significantly affect choline acetyltransferase activity in these tissues. Electrical stimulation of the posterior hypothalamus did not affect choline acetyltransferase activity and elevated tyrosine hydroxylase activity in the adrenal medulla only after 48 hours of stimulation. Results indicate that tyrosine hydroxylase is a more sensitive indicator of increased sympathetic nerve activity than choline acetyltransferase. 26 references.

000225 Lundgren, Paul; Carr, Laurence A. Department of Pharmacology and Toxicology, University of Louisville, Louisville, KY 40202 **Effects of anisomycin and CNS stimulants on brain catecholamine synthesis.** Pharmacology Biochemistry and Behavior. 9(4):559-561, 1978.

The effects of anisomycin, an inhibitor of cerebral protein synthesis, on catecholamine synthesis and the modification of these effects by CNS stimulants were studied in male C57/BL6 mice. Anisomycin was injected subcutaneously, 30 minutes prior to i.p. injection of d-amphetamine, strychnine, or caffeine. Tritiated tyrosine was injected i.v. 15 minutes before sacrifice, 1 or 2 hours after injection of anisomycin. Measurements of the specific activity of 3H-tyrosine and the accumulation of 3H-norepinephrine and 3H-dopamine indicate that anisomycin decreased the rate of catecholamine synthesis. This effect was not significantly affected by the CNS stimulants. Results suggest that the reported reversal of anisomycin induced amnesia by these stimulants is not due to an attenuation of brain catecholamine synthesis inhibition. 20 references. (Author abstract modified)

000226 Lundy, P. M.; Magor, G.; Shaw, R. K. Defence Research Establishment, Suffield Biomedical Section, Ralston, Alberta, Canada T0J 2N0 **Gamma aminobutyric acid metabolism in different areas of rat brain at the onset of soman-induced convulsions.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 234(1):64-73, 1978.

The severity convulsions after an injection of soman alone (median lethal dose) or soman preceded by the anticonvulsants diazepam, aminooxyacetic acid (AOAA), or n-dipropyl acetic acid were determined in male Sprague-Dawley rats. All three anticonvulsants greatly reduced soman convulsions. Glutamic acid decarboxylase (GAD) and gamma-aminobutyric acid transaminase (GABA-T) activities and GABA levels in different brain regions were unaffected by soman in animals sacrificed at the onset of convulsions. Diazepam and AOAA both abolished convulsions; diazepam had no effect on GABA-T activity or GABA levels, but AOAA inhibited GABA-T and raised GABA levels significantly. These results rule out the possibility that soman seizure activity is due to changes in the activity of GAD or GABA-T. Soman induced convulsions appear to be blocked by compounds that exert their effects via alteration in GABA metabolism. 22 references. (Author abstract modified)

000227 Lundy, Paul M. Biomedical Section, Defence Research Establishment Sufield, Ralston, Alberta, Canada **Mechanism of the cardiovascular activity of dibenzoxazepine in cats.** European Journal of Pharmacology (Amsterdam). 48(3):271-279, 1978.

In a study of the mechanism of the cardiovascular activity of dibenzoxazepine (DBO) in cats, it was found that small doses of DBO given to anesthetized cats resulted in dose related increases in heartrate (up to 70 beats/min) and blood pressure (up to 80 mm Hg). The pressor response was blocked by pretreatment of the animals with phentolamine; pretreatment for 3 days with 6-hydroxydopamine; with mecamylamine and spinal transection between C1 and C2 but not by propranolol or adrenalectomy. The increase in heartrate was blocked by pretreatment with propranolol, 6-hydroxydopamine, mecamylamine and spinal transection whereas adrenalectomy only affected the response slightly. DBO produced only negative effects on the isolated rabbit heart. Bioassay of arterial blood showed an increased level of circulating catecholamines corresponding to the cardiovascular stimulation. DBO had no tyramine like activity on the isolated rabbit aortic strip but slightly potentiated the contraction induced by noradrenaline. These findings strongly suggest that the cardiovascular effects resulted from central stimulation of the sympathetic nervous system. A minor part of the observed sympathomimetic effects may also be the result of the ability of DBO to potentiate the effects of noradrenaline perhaps by blocking catecholamine uptake. 10 references. (Author abstract modified)

000228 Mackerer, Carl R.; Kochman, Ronald L.; Bierschenk, Bert A.; Bremner, Scott S. Searle Laboratories, P.O. Box 5110, Chicago, IL 60680 **The binding of (3H)diazepam to rat brain homogenates.** Journal of Pharmacology and Experimental Therapeutics. 206(2):405-413, 1978.

A technique for measuring specific tritiated diazepam binding to subcellular fractions of rat brain is described. Binding occurred in fresh or hypotonically shocked, frozen, and thawed preparations from male CR-CD rats. The binding was independent of the buffer used and was concentrated in the synaptosomal fraction. The total binding capacity of crude brain homogenate was entirely recovered in the particulate fractions. Binding was saturable and reached 34pmol/g tissue; half maximal binding occurred at 3.2nM. Hill and Scatchard analysis indicated that the binding was noncooperative and to a single class of sites; binding was time dependent and reversible. Binding was highest in cerebral cortex, hippocampus, and cerebellum; intermediate in midbrain, hypothalamus, corpus striatum, and medulla oblongata/pons; and lowest in spinal cord. Benzodiazepines inhibited binding of (3H)diazepam in a manner correlated with pharmacological activity in vivo, and binding was not inhibited by non-benzodiazepine anxiolytics, muscle relaxants, anticonvulsants, strychnine, or glycine. Distribution of (3H)diazepam binding in several regions of rat CNS correlated with sodium independent binding of gamma-aminobutyric acid (GABA) in the same regions. Results suggest that GABA, but not glycine, may be involved in the mechanism of action of benzodiazepines. 32 references. (Author abstract modified)

000229 MacNeil, D.; Gower, M.; Szymanska, I. Department of Pharmacology, Hoffmann-La Roche Inc., Nutley, NJ 07110 **Response of dopamine neurons in substantia nigra to muscimol.** Brain Research (Amsterdam). 154(2):401-403, 1978.

The effects of muscimol on dopamine (DA) neuronal activity were studied in the rat substantia nigra. Extracellular recordings were made from DA cells in the substantia nigra zona compacta (SNC). The more rapidly firing, non-DA cells in the SNR were also studied. At cumulative doses of 0.3, 0.9, and 2.1mg/kg i.u.,muscimol increased DA cell firing in a dose-dependent manner. Increases seen with each injection occurred almost immediately, suggesting that muscimol easily penetrates the blood brain barrier and has a direct action. In other experiments, picrotoxin did not reverse the muscimol-induced increase in DA cell firing rate, but rather potentiated it. Bicuculline produced a 34% decrease in the accelerated response to muscimol. Muscimol decreased the firing rate of non-DA cells. Implications of the results are discussed. 13 references.

000230 Magistretti, P.; Schorderet, M. Departement de Pharmacologie, Ecole de Medecine, CH-1211 Geneva 4, Switzerland **Differential effects of benzamides and thioxanthenes on dopamine-elicited accumulation of cyclic AMP in isolated rabbit retina.**

Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 303(2):189-191, 1978.

Benzamides or thioxanthenes were tested as potential antagonists of the cyclic AMP accumulation induced by dopamine in intact rabbit retinae in vitro in the presence of theophylline. The neuroleptic sulpiride was found to be totally inactive, whereas a substituted benzamide (clebopride) had small but significant antagonist effect at the same concentration. Among thioxanthenes, isomers of cis-configuration, which are potent neuroleptics, completely inhibit the cyclic AMP accumulation induced by dopamine, in contrast to transisomers which had no inhibitory effects. These data confirm that retina in vitro is another suitable model for screening neuroleptics and that the mechanism of action of sulpiride needs further investigation. 16 references. (Author abstract)

000231 Majewska, Maria Dorota; Strosznajder, Joanna; Lazarewicz, Jerzy. Polish Academy of Sciences, Medical Research Centre, Department of Neurochemistry, 00-784 Warszawa, Poland **Effect of ischemic anoxia and barbiturate anesthesia on free radical oxidation of mitochondrial phospholipids.** Brain Research (Amsterdam). 158(2):423-434, 1978.

The mitochondrial fraction obtained from brains of guinea-pigs submitted to ischemia showed a decrease of phospholipid level, especially plasmalogens in the fraction of ethanolamine phospholipids and choline phospholipids. This decrease in phospholipid level was accompanied by an increase of free radical oxidation processes of unsaturated fatty acids from the phospholipids. The peroxidation processes of mitochondrial lipids were stimulated by calcium ions and, to a lesser extent, by magnesium ions. Barbiturate anesthesia inhibited the peroxidation of fatty acids and increased the antioxidant abilities of the nervous tissue; nembutal added in vitro had no effect of these processes. The effect of acetylcholine and the antioxidant ability of nervous tissue under barbiturate anesthesia are discussed in relation to ischemia. 34 references. (Author abstract modified)

000232 Marcucci, F.; Mussini, E.; Cotellessa, L.; Ghirardi, P.; Parenti, M.; Riva, R.; Salva, P. nstituto di Ricerche Farmacologiche "Mario Negri," Via Eritrea, 62 I-20157 Milan, Italy **Distribution of camazepam in rats and mice.** Journal of Pharmaceutical Sciences. 67(10):1470-1471, 1978.

The new psychoactive benzodiazepine derivative camazepam (5mg/kg i.v.)was injected in male CD-COBS rats and CD1 mice to study its distribution in the blood and brain. Peak blood levels were about 0.9mcg/ml in rats and 0.6mcg/ml in mice. Peak brain levels were about 1.5mcg/g in rats and 0.8mcg/g in mice. The apparent blood half-life of camazepam was 9 minutes in mice and 20 minutes in rats. 4 references. (Author abstract)

000233 Mares, P.; Mares, J.; Hessler, M.; Payne, J.; Remes, P. Institute of Physiology, Czechoslovak Academy of Sciences, 142 20 Prague 4/Krc, Czechoslovakia **Influence of GABA on cortical interhemispheric response during ontogenesis in rats.** Activitas Nervosa Superior (Praha). 20(1):20-21, 1978.

In a paper read at the 13th Interdisciplinary Conference of Experimental and Clinical Study of Higher Nervous Functions, held at Piestany, Czechoslovakia during October 1976, the influence of gamma aminobutyric acid (GABA) on cortical interhemispheric response during ontogenesis in rats is described. Interhemispheric responses (IHR) were recorded from 33 rats aged from 9 days to adulthood both before and after the topical application of GABA at the electrode site. In adult rats, the IHR was formed by an initial positive/negative sequence which was followed by a slow surface negative wave of low amplitude. The negative phase of the initial response was suppressed by GABA, whereas the positivity was augmented in amplitude and duration, and the late negative wave increased substantially in amplitude so that it formed the dominant part of the response. 2 references.

000234 Martin, M. R.; McHanwell, S.; Biscoe, T. J. Laboratory of Neuro-otolaryngology, Building 36, Room 5D32, NIH, Bethesda, MD 20014 **A microelectrophoretic and electrophysiological study on normal and Jimpy mutant mouse spinal neurones and reflexes.** Brain Research (Amsterdam). 151(2):225-233, 1978.

The results of microiontophoretic experiments on normal and Jimpy mutant mouse spinal cords are presented. It was found that spinal neurons in the Jimpy mutant mouse respond to monocarboxylic and dicarboxylic amino acids in essentially the same manor as do spinal neurons of other mammals, and that the sensitivity of glycine and gamma aminobutyric acid induced responses to strychnine and bicuculline are qualitatively similar to those of the normal mouse. However, the glycine receptor on mouse spinal neurons is somewhat more sensitive to bicuculline than similar receptors in other mammals. The results also suggest that the activity of uptake systems for L-glutamate and L-aspartate are essentially the same in the normal and Jimpy mutant mouse, and the rat. Thus it appears that oligodendroglia do not play a major role in the inactivation and removal of the amino acid neurotransmitter candidates, L-glutamate and L-aspartate. The effective removal of kainate from the neuronal environment is much more rapid in the Jimpy than the normal, suggesting that the lipophilic region of this compound attaches to the myelin in the normal mouse and impedes its removal. The evidence also suggests that there is no active uptake mechanism for kainate. The only overt electrophysiological abnormality which could be detected in the Jimpy in this study was a reduced conduction velocity. 17 references. (Author abstract modified)

000235 Mason, S. T.; Sanberg, P. R.; Fibiger, H. C. Division of Neurological Sciences, Department of Psychiatry, University of British Columbia, Vancouver, Canada V6T 1W5 **Kainic acid lesions of the striatum dissociate amphetamine and apomorphine stereotypy: similarities to Huntington's chorea.** Science 201(4353):352-355, 1978.

Kainic acid was injected into rat striatum and the stereotypy elicited by various doses of amphetamine and apomorphine examined in an attempt to determine if it parallels the amphetamine and apomorphine response found in patients with Huntington's chorea. Kainic acid lesion of cell bodies in the dorsal striatum enhanced the stereotypy producing effects of d-amphetamine without affecting the stereotypy produced by the direct receptor agonist apomorphine. This pattern of results parallels that found in patients suffering from Huntingon's chorea, thus strengthening the parallels between the kainic acid animal model and the human disease state initially suggested on biochemical grounds. The results suggest a dissociation of the mechanisms involved in the production of stereotypy by these two drugs, perhaps in terms of differential involvement of the striatonigral negative feedback loop. 40 references. (Author abstract modified)

000236 Mason, Stephen T.; Fibiger, Hans C. Division of Neurological Sciences, Department of Psychiatry, University of British Columbia, Vancouver, British Columbia V6T 1W5, Canada **Noradrenaline and spatial memory.** Brain Research (Amsterdam). 156(2):382-386, 1978.

To determine the role of noradrenaline (NA) in hippocampal spatial memory, 6-hydroxydopamine was injected bilaterally into the fibers of the dorsal noradrenergic bundle of rats prior to training in a spatial alternation task in a conventional T-maze.

After 5 days of training, control animals showed an abrupt improvement in performance, and from day 8 onward maintained a high level of rewarded spatial alternation, averaging about 90% correct. The lesioned animals, which sustained virtually complete destruction of the NA input into the hippocampus, never progressed beyond 75% correct; four of the nine lesioned animals never learned the task, and the five that did acquire the task took longer than controls. 28 references.

000237 Mayer, M. L.; Hill, R. G. Department of Pharmacology, School of Pharmacy, University of London, 29-39 Brunswick Square, London WC1N 1AX, England **The effects of intravenous fentanyl, morphine and naloxone on nociceptive responses of neurones in the rat caudal medulla.** Neuropharmacology (Oxford). 17(7):533-539, 1978.

The effects of morphine, fentanyl, and naloxone on the responses of reticular formation neurons in the male Wistar rat caudal medulla to noxious stimuli were investigated. Of 106 spontaneously active neurons tested, 53% responded to noxious stimulation, such as immersion of the tail in hot water for 30 seconds. The evoked response consisted of an increase (82%), a decrease (7%), or a biphasic alteration (11%) in firing rate and could be produced by other noxious stimuli, such as a pinch, but not by stroking, tapping, or joint manipulation. Morphine (0.8-1.0mg/kg) or fentanyl (5-10mcg/kg) administered intravenously blocked the acceleration in firing rate produced by noxious stimuli; this effect was antagonized by naloxone, suggesting the involvement of specific opiate receptors. Naloxone (0.5-10mg/kg) blocked decreases in firing rate produced by noxious stimuli, suggesting that an endogenous opioid may be released onto these neurons as a result of noxious stimuli applied to the periphery. 51 references. (Author abstract modified)

000238 Mazurkiewicz-Kwilecki, I. M.; Bielkiewicz, B. Department of Pharmacology, Faculty of Medicine, University of Ottawa, 275 Nicholas Street, Ottawa, Ontario, Canada K1N 9A9 **The effects of chronic morphine treatment on histamine concentration and histidine decarboxylase activity in rat brain.** Progress in Neuro-Psychopharmacology. 2(1):93-99, 1978.

Significantly enhanced histidine decarboxylase (HD) activity was found in the hypothalamus and cortex of morphine dependent, male Sprague-Dawley rats, suggesting an increased histamine (HA) synthesis in these brain regions. Significant increases in HD activity were also observed after morphine withdrawal. These findings indicate that the putative transmitter HA is involved in the mechanisms of morphine dependence and withdrawal. 24 references. (Author abstract modified)

000239 McLennan, H.; Hall, J. G. Dept. of Physiology, University of British Columbia, Vancouver, B.C., V6T 1W5, Canada **The action of D-alpha-aminoadipate on excitatory amino acid receptors of rat thalamic neurones.** Brain Research (Amsterdam). 149(2):541-545, 1978.

In an investigation of the action of D-alpha-aminoadipate (D-alpha-AA) on excitatory amino acid receptors of rat thalamic neurons it was confirmed that D-alpha-AA, unlike its L-isomer, is an antagonist rather than an excitant of excitatory amino acids. The differential actions of D-alpha-AA and glutamic acid diethylester add to previous extracellular and intracellular evidence suggesting that a variety of amino acid excitants may not be interacting with the same neuronal receptors. The two antagonists were able to distinguish different mechanisms for the excitation of thalamic neurons by L-glutamate (GLUT) and DL-homocysteate (DLH), and the fact that neither antagonist is very active against kainate indicates that GLUT, DLH, and kainate interact with different populations of receptors. 15 references.

000240 McManus, C.; Hartley, E. J.; Seeman, P. Dept. of Pharmacololgy, University of Toronto, Toronto, M5S IA8 Canada **Increased binding of (3H)apomorphine in caudate membranes after dopamine pretreatment in vitro.** Journal of Pharmacy and Pharmacology (London). 30(7):444-447, 1978.

The effects of prolonged exposure (in vitro) of dopamine on the dopamine neuroleptic receptors in the caudate nucleus of the calf were studied in terms of the specific binding of (3H)apomorphine, (3H)haloperidol, (3H)naloxone, and 3H-WB-4101. Data indicate that preexposure of caudate homogenate with dopamine or noradrenaline in vitro leads to an increased binding of (3H)apomorphine. Since the dopamine pretreatment did not produce statistically significant increments in the specific binding of the alpha-adrenoceptor ligand (3H-WB-4101) or the opiate ligand (3H)naloxone,the effect on the (3H)apomorphine binding may be reasonably selective for dopamine receptors. However, the fact that both noradrenaline and dopamine were almost equipotent in producing this increase indicates that the effect was not extremely chemically specific. It is doubtful that the effect was simply an action of the catechol moiety since isoprenaline did not elicit any increase in the specific binding of (3H)apomorphine. 21 references.

000241 McMillen, B. A.; Shore, P. A. Dept. of Pharmacology, University of Texas Health Science Center, Dallas, TX 75235 **Amfonelic acid, a non-amphetamine stimulant, has marked effects on brain dopamine metabolism but not noradrenaline metabolism: association with differences in neuronal storage systems.** Journal of Pharmacy and Pharmacology (London). 30(7):464-466, 1978.

The effects on brain noradrenaline metabolism of amfonelic acid (AFA) alone or in combination with haloperidol or adrenoceptor blocking drugs (phenoxybenzamine, propranolol) were studied by examining whole brain concentrations of the noradrenaline metabolite, 3-methoxy-4-hydroxyphenylglycol sulphate (MOPEG-SO4), and the effect of AFA on the rate of noradrenaline depletion after tyrosine hydroxylase inhibition was examined. Data show that AFA had no effect on MOPEG-SO4 concentration when given alone, nor did it modify the actions of the blocking drugs. Brian MOPEG-SO4 concentrations were elevated to the same extent by phenoxybenzamine alone as with the combination of phenoxybenzamine and AFA. In contrast to this lack of affect on MOPEG-SO4, there was a marked potentiation by AFA of haloperidol's effects on brain dopamine metabolism, as evidenced by the ninefold increase of brain dihydroxyphenylacetic acid (DOPAC) concentrations. Results demonstrate that the striking effects of AFA on dopamine metabolism are not duplicated on noradrenaline metabolism. The preferential action of this and other nonamphetamine stimulants on the dopamine neuron may be a consequence of a fundamental difference in interpool neurotransmitter relations between the dopamine and noradrenaline neuronal systems. 18 references.

000242 McNulty, Josephine; O'Donovan, D. J.; Leonard, B. E. Department of Pharmacology, University College, Galway, Ireland **The acute and chronic effects of d-amphetamine, chlorpromazine, amitriptyline and lithium chloride on adenosine 5-triphosphatases in different regions of the rat brain.** Biochemical Pharmacology (Oxford). 27(7):1049-1053, 1978.

The hypothesis that adenosine triphosphatase (ATPase) plays a primary role in the reuptake process of biogenic amines in the rat brain was tested. Four centrally-acting drugs, known to alter the turnover of biogenic amines in different ways, were studied for their in vivo effects on NaK ATPase and Mg2 (EC 3.6.1.5) ATPase activities in high speed supernatant fractions from 10 brain regions. The acute and chronic administration of amphetamine, chlorpromazine, and lithium chloride altered the activities of the ATPases in several of the brain regions studied. In

most cases, the regions in which the activity of these enzymes was most affected coincided with the areas in which other investigators have shown these drugs to have a pharmacological action. Amphetamine and amitriptyline increased the activity of the ATPases in several regions, whereas chlorpromazine and lithium chloride had the opposite effects. While it seems possible that different classes of drugs can affect ATPases in different ways depending on their neuropharmacological profile, there is little evidence from this study to substantiate the view that changes in the activity of ATPase is directly involved in the activity of the reuptake transport system for brain biogenic amines. 32 references. (Author abstract)

000243 Meier-Ruge, W.; Emmenegger, H.; Enz, A.; Gygax, P.; Iwangoff, P.; Wiernsperger, N. Department of Basic Medical Research, Sandoz Ltd., CH-4002 Basel, Switzerland **Pharmacological aspects of dihydrogenated ergot alkaloids in experimental brain research.** Pharmacology (Basel). 16(Suppl. 1):45-62, 1978.

The pharmacological aspects of dihydrogenated ergot alkaloids on the brain and their action on the cAMP phosphodiesterase of the brain were investigated. In three different experimental series, DH-ergotoxine mesylate (Hydergine) improved EEG energy, disturbed by temporary ischemia, in the isolated perfused cat head. DH-ergonine improved experimentally-induced metabolic decline, as did DH-ergotoxine, but at one-tenth of the dosage. In hypovolemic oligemia, papaverine further decreased EEG energy although it improved cerebral blood flow, while DH-ergotoxine preserved EEG activity at a constant level. Gradient centrifugation studies demonstrated that 60% of the incorporated DH-ergotoxine mesylate was localized in the synaptosomal fraction. DH-ergotoxine inhibited both the noradrenaline-stimulated cAMP adenyl cyclase activity and cAMP-splitting phosphodiesterase, so regulating intracellular cAMP level and economizing mediation of neuronal information by cAMP. It is concluded that DH-ergotoxine mesylate and DH-ergonine belong to a group of compounds which are capable of improving the metabolic economy of the central nervous system. 46 references. (Author abstract modified)

000244 Meltzer, Herbert Y.; Fessler, Richard G.; Simonovic, Miljana; Fang, Victor S. Department of Psychiatry, Pritzker School of Medicine, University of Chicago, Chicago, IL 60637 **The effect of mescaline, 3,4-dimethoxyphenethylamine and 2,5-dimethoxy-4-methylamphetamine on rat plasma prolactin: evidence for serotonergic mediation.** Life Sciences. 23(11):1185-1192, 1978.

The effects of mescaline, 3,4-dimethoxyphenethylamine (DMPEA), and 2,5-dimethoxy-4-methylamphetamine (DOM) on plasma prolactin levels were investigated in male Sprague-Dawley rats. The drugs were administered alone or in combination with the serotonin (5-HT) synthesis blocker para-chlorophenylalanine (PCPA) or the 5-HT receptor blocker methysergide. All three compounds increased plasma prolactin levels. These increases were potentiated by PCPA and blocked by methysergide. Pretreatment with alpha-methylparatyrosine (AMPT), an inhibitor of catecholamine synthesis, resulted in an increase in plasma prolactin equal to the additive effects of the independent administration of mescaline, DMPEA, or DOM plus the AMPT induced response. Results suggest that mescaline, DMPEA, and DOM may exert their effects on rat plasma prolactin through direct stimulation of serotonin receptors. 32 references. (Author abstract modified)

000245 Mennini, Tiziana; Pataccini, R.; Samanin, R. Istituto di Richerche Farmacologiche 'Mario Negri', Via Eritrea, 62, 20157 Milan, Italy **Effects of narcotic analgesics on the uptake and release of 5-hydroxytryptamine in rat synaptosomal preparations.** British Journal of Pharmacology (London). 64(1):75-82, 1978.

The effects of various narcotics on the uptake and release of labeled 5-hydroxytryptamine (5-HT) in brain and spinal synaptosomes of male Sprague-Dawley rats were investigated. Methadone was the most active in inhibiting 5-HT uptake. Levorphanol also inhibited 5-HT uptake to a large extent, while dextrophan, pethidine, and pentazocine showed much less activity. Etorphine and morphine had virtually no 5-HT uptake inhibitory activity. The same order of potency was found when the drugs were tested as 5-HT releasers in 3H-5-HT preloaded synaptosomal pellets incubated for 20 minutes with the narcotics. When 5-HT release was studied by a perfusion technique, which largely prevented reuptake of the released amine, only fenfluramine significantly released increased spontaneous 5-HT release. These data suggest that the apparent 5-HT release induced by narcotics in traditional incubation techniques may largely depend on their ability to interfere with reuptake mechanisms. The effects of the narcotics on 5-HT uptake showed no relationship to their relative potency as analgesics in the rat. In light of their poor effectiveness as 5-HT releasers, it is concluded that mechanisms other than 5-HT uptake inhibition and release are involved in the analgesic effects of these compounds. 45 references. (Author abstract modified)

000246 Mercer, P. F.; Mogenson, G. J.; Paquette, S. Y. M. Dept. of Physiology, University of Western Ontario, London, Ontario, Canada N6A 5C1 **Sodium intake following destruction of the anterior hypothalamus in the rat.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(2):252-259, 1978.

Sodium intake and sodium output were measured in rats before and after lesioning of the anterior hypothalamus. Both parameters were lower than control rats following the lesioning procedure. When an amount of sodium was given orally to these lesioned rats to make up the deficit in sodium intake, no difference was found in sodium intake or output between the rats with lesions and normal rats. Rats with anterior hypothalamic lesions were able to increase their sodium intake following a period of sodium deprivation or adrenalectomy. When presented with concentrations of sodium chloride ranging between 0.9% and 2.5%, rats with lesions decreased their intake of sodium in a manner similar to control rats except that the level of intake in the lesioned rats was lower for all concentrations. Control rats and those with lesions were not different in their intakes of potassium chloride solutions. Findings suggest that the anterior hypothalamus is important in setting the absolute intakes of sodium, but does not interfere with the control mechanisms regulating the sodium intake. 18 references. (Author abstract)

000247 Mezey, Eva; Palkovits, M.; de Kloet, E. R.; Verhoef, J.; de Wied, D. First Department of Anatomy, Semmelweis University Medical School, 1450 Budapest, Hungary **Evidence for pituitary-brain transport of a behaviorally potent ACTH analog.** Life Sciences (Oxford). 22(10):831-838, 1978.

Following intrapituitary, intravenous, or intrasellar injection of a labeled adrenocorticotrophic hormone analogue (3H-ACTH4-9), the radioactivity of various brain regions was determined in intact male Wistar rats and in rats with the pituitary stalk cut 1-8 days previously. Intrasellar and intrapituitary administration of 3H-ACTH4-9 resulted in significantly higher radioactivity levels in the brain than did intravenous injection of an equimolar dose of the labeled peptide. Intrapituitary injection resulted in uptake with clear regional differences, with uptake highest in hypothalamus. Uptake of radioactivity in the hypothalamus, but not in other brain regions, was markedly depressed 24 hours after stalk section and restored 8 days after section. Results suggest a significant flow of radioactivity from the pituitary to the brain, particularly to the hypothalamus. Transport to the hypothalamus is presumably partly vascular via

the stalk. Transport to other brain areas may occur via the cerebrosopinal fluid or by a neural route. 26 references. (Author abstract modified)

000248 Miranda, Franca; Candelaresi, Gianluigi; Samanin, Rosario. Instituto di Ricerche Farmacologiche "Mario Negri' Via Eritrea, 62, I-20157 Milan, Italy **Analgesic effect of etorphine in rats with selective depletions of brain monoamines.** Psychopharmacology (Berlin). 58(1):105-109, 1978.

The analgesic effect of etorphine was compared with that of morphine in a group of rats with electrolytic lesions of the nucleus medianus raphe or with a second group of rats injected intraventricularly with 6-hydroxydopamine. The analgesic effects of both morphine and etorphine were markedly reduced in animals with raphe lesions, but not significantly modified in those receiving 6-hydroxydopamine. Etorphine and morphine significantly increased the forebrain levels of 5-hydroxyindoleacetic acid when administered subcutaneously at doses of 5mg/kg and 2mg/kg, respectively. Neither drug significantly affected the forebrain levels of monoamines. In regard to morphine, the integrity of the serotoninergic system in the brain is important for the full analgesic effect of etorphine. Also, evidence indicating that narcotics other than morphine and etorphine can effect brain metabolism is discussed. 40 references. (Author abstract modified)

000249 Mireylees, Stewart E.; Goodlet, Ian; Sugrue, Michael F. Department of Pharmacology, Organon Scientific Development Group, Organon Laboratories Ltd., Newhouse, Lanarkshire ML1 5SH, England **Effects of Org 6582 on monoamine uptake in vitro.** Biochemical Pharmacology (Oxford). 27(7):1023-1027, 1978.

An investigation was conducted on the effects of Org 6582 on the uptake of (3H)DA into synaptosome rich homogenates of male Wistar rat corpus striatum and on the uptake of (3H)NA or (3H)5HT into synaptosome rich homogenates of rat hypothalamus. Two experimental approaches were adopted: 1) drugs were directly added to the incubation medium and 2) rats were injected interperitoneally at various times prior to death and synaptosomal (3H)monoamine uptake subsequently determined. Org 6582 was found to be a competitive inhibitor of (3H)5HT uptake. The ability of Org 6582 to inhibit (3H)5HT uptake was 16 and 72 times greater than its effect on (3H)NA and (3H)DA uptake, respectively. The findings confirm that Org 6582 is a potent long-acting selective inhibitor of 5HT uptake. 30 references. (Author abstract modified)

000250 Mishra, Ram K.; Wong, Yu-Wah; Varmuza, Susannah L.; Tuff, Larry. Neuropharmacology Laboratory of the Department of Psychiatry, McMaster University Medical Centre, Hamilton, Ontario, Canada **Chemical lesion and drug induced supersensitivity and subsensitivity of caudate dopamine receptors.** Life Sciences (Oxford). 23(5):443-446, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, a study of dopamine (DA) receptor supersensitivity is described. The effects of 6-hydroxydopamine (6-OHDA) lesions in the substantia nigra on caudate adenylate cyclase activity and on 3H-haloperidol binding to membrane DA receptors were examined in male Sprague-Dawley rats. The lesions resulted in significantly greater DA stimulation of adenylate cyclase. Haloperidol binding sites were increased by 28% on the lesioned caudate side without changes in dissociation constants. After chronic treatment with L-Dopa, bromocriptine, or piribedil, the 3H-haloperidol binding sites were decreased by 40% with no change in dissociation constant. The stimulatory effect of DA on cyclic adenosine monophosphate formation was also abolished. Results suggest a close relationship between some populations of DA receptors and adenylate cyclase in the caudate nucleus. 11 references. (Author abstract modified)

000251 Mohammed, Y. S.; Osman, M. Y. Dept. of Biochemistry, Medical Research Institute, Hadara Post Office, Alexandria, Egypt **Inhibition of cholinesterase by epinephrine and norepinephrine.** Arzneimittel-Forschung (Aulendorf). 28(1):16-18,, 1978.

The effect of epinephrine and norepinephrine on rat brain acetylcholinesterase was evaluated in terms of the type of inhibition and kinetic behavior. Acetylcholinesterase and monoamine oxidase were found to be inhibited by each other's substrate. The inhibition of acetylcholinesterase by low concentrations of epinephrine or norepinephrine was found to follow first-order reaction kinetics. The constants charaterizing this inhibition, the bimolecular rate and the enzyme inhibitor dissociation constant, were determined. The inhibition of acetylcholinesterase by epinephrine was found to be of the mixed type while its inhibition by norepinephrine was of the competitive type. 11 references. (Author abstract modified)

000252 Mohler, H.; Okada, T.; Enna, S. J. Pharmaceutical Research Department, F. Hoffmann-La Roche, CH-4002 Basel, Switzerland **Benzodiazepine and neurotransmitter receptor binding in rat brain after chronic administration of diazepam or phenobarbital.** Brain Research (Amsterdam). 156(2):391-395, 1978.

The effects of chronic administration of diazepam (3mg/kg/day for 30 days) or phenobarbital (30mg/kg/day for 30 days) on the number and affinity of benzodiazepine, dopamine (DA), gamma-aminobutyric acid (GABA), and muscarinic cholinergic receptors in several brain regions of SPF rats were investigated. Both benzodiazepine and DA receptor binding were unchanged after chronic treatment with diazepam or phenobarbital. GABA receptor binding was also unaltered, except for a decrease of 60-65% in the striatum of both diazepam and phenobarbital-treated animals. Muscarinic cholinergic receptor binding was unchanged, except for a 30% decrease in the cerebellum in both drug groups. Receptor saturation studies indicated that the changes in striatal GABA receptor binding and cerebellar cholinergic muscarinic receptor binding were due to a decrease in the number of receptor sites, with no change in receptor affinity. The lack of alteration of benzodiazepine receptor binding after chronic treatment with diazepam is consistent with the general absence of tolerance during benzodiazepine therapy. 32 references.

000253 Montero, Sandra; Arce, Fernando; Ungerstedt, Urban. Histology Department, Karolinska Institute, Estocolmo, Sweden **/Studies of the effect of emetine and ipecac on central dopamine mechanisms. A pilot study./** Estudios sobre el efecto de la emetina y de la ipecacuana sobre los mecanismos centrales de la dopamina. Un estudio piloto. Acta Psiquiatrica y Psicologica de America Latina (Buenos Aires). 24(1):46-48, 1978.

The effects of ipecac and emetine on central dopamine receptors were studied. Previous studies show that emetine, a principal alkaloid extract of ipecac, does not induce rotational behavior, connected with stimulation of dopamine receptors. Eight rats, lesioned unilaterally with 6-hydroxydopamine at least 2 months before the experiment, manifested stereotypic behavior after being introduced to drugs which stimulated dopamine receptors. These rats then were injected with ipecac or emetine hydrochloride. No rotational behavior was observed in the rats. The lack of this behavior indicates that ipecac and emetine do not have central dopamine receptor stimulating properties. This finding probably should not be explained by an inability to enter through the blood-brain barrier, but rather by a lack of effect on

dopamine receptors. This reasoning also would exclude the dopamine receptors in the chemotrigger zone as being responsible for the emetic effect. It seems highly improbable that clinical usage of ipecac would cause adverse psychotic-like side-effects due to stimulation of central dopamine receptors. 3 references. (Journal abstract modified)

000254 Moss, Robert L. ;Dudley, Carol A. Dept. of Physiology, University of Texas Health Science Center at Dallas, Southwestern Medical School, Dallas, TX 75235 **Changes in responsiveness of medial preoptic neurons to the microelectrophoresis of releasing hormones as a function of ovarian hormones.** Brain Research (Amsterdam). 149(2):511-515, 1978.

In light of previous research on the interaction between the ovarian, pituitary, and hypothalamic releasing hormones, the action of estrogen and progesterone in regulating medial preoptic area nerve cell sensitivity to the microelectrophoretic deposition of two hypothalamic releasing hormones (thyrotropin releasing hormone, luteinizing releasing hormone (LRH) and LRH analogs) was investigated in Sprague-Dawley rats. Results indicate that estrogen and progesterone primed ovariectomized females were more likely to respond to a given LRH drug with excitation than were nonprimed animals, regardless of the LRH drug being tested. These results are consistent with LRH's postulated role in mediating gonadotropin secretion and mating behavior. 30 references.

000255 Mowles, T. F.; Burghardt, B.; Burghardt, C.; Charnecki, A.; Sheppard, H. Department of Cell Biology, Roche Research Center, Hoffmann-La Roche Inc., Nutley, NJ 07110 **The dopamine receptor of the rat mammotroph in cell culture as a model for drug action.** Life Sciences (Oxford). 22(23):2103-2112, 1978.

A series of experiments was carried out to examine the relative responsiveness of the mammatroph dopamine receptor in isolated pituitary cells to various agents and to compare it to a dopamine sensitive adenylate cyclase system. It is noted that dopamine receptor stimulants such as S-584 and lergotrile mesylate are inactive in stimulating the adenylate cyclase preparations but are potent in inhibiting pituitary prolactin secretion. Such inhibition of prolactin secretion can be reversed by haloperidol or sulpiride. In contrast, sulpiride does not block dopamine stimulation of cyclic AMP formation. In addition, dopamine, apomorphine, or lergotrile mesylate have no effect on a pituitary adenylate cyclase preparation and dopamine fails to elevate cyclic AMP in the intact cells in culture. Despite the similarities of these two dopamine sensitive systems with respect to a number of agonists and antagonists, these differences suggest that the pituitary system may, with further study, offer greater reliability as a predictive test for clinically useful agents. Results also suggest that the receptors for dopamine are of two types, only one of which is coupled to adenylate cyclase. 31 references. (Author abstract modified)

000256 Mulder, Arie H.; de Langen, Cees D. J.; de Regt, Victoria; Hogenboom, Francois. Department of Pharmacology, Free University, Medical Faculty, van der Boechorststraat 7, 1081-BT Amsterdam, The Netherlands **Alpha-receptor-mediated modulation of 3H-noradrenaline release from rat brain cortex synaptosomes.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 303(2):193-196,, 1978.

The effects of oxymetazoline and noradrenaline (in the presence of desipramine) on the release of 3H-noradrenaline from rat brain cortex synaptosomes were studied using a superfusion technique. Both drugs were found to reduce the depolarization-induced release of 3H-noradrenaline. The release modulating effect of noradrenaline was antagonized by phentolamine and yohimbine. The data provide direct evidence for the hypothesis that alpha-receptors modulating the release of noradrenaline are localized on varicosities of central noradrenergic neurons. 12 references. (Author abstract)

000257 Muller, Walter E.; Snyder, Solomon H. Department of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Glycine high affinity uptake and strychnine binding associated with glycine receptors in the frog central nervous system.** Brain Research (Amsterdam). 143(3):487-498, 1978.

Specific tritiated strychnine binding and high affinity uptake of tritiated glycine were demonstrated in synaptosomal fractions from bullfrog cerebral cortex, optic tectum, brainstem, and spinal cord. The relative potencies of small neutral amino acids in competing for tritiated strychnine binding were similar in frog brain and spinal cord. No evidence for a high affinity accumulation of tritiated taurine by synaptosomal fractions was found. These findings favor glycine rather than taurine as an inhibitory transmitter in frog spinal cord and suggest that glycine may have a synaptic role in higher brain centers in the frog. 32 references. (Author abstract modified)

000258 Muni, I. A.; Leeling, J. L.; Johnson, N., Jr. Industrial Bio-Test, Decatur, IL 62526 **Fate of 14C-3-methylamino-1,2,3,4-tetrahydrocarbazole hydrochloride in rats and dogs.** Journal of Pharmaceutical Sciences. 67(10):1423-1425, 1978.

The metabolic fate of 14C-labeled 3-methylamino-1,2,3,4-tetrahydrocarbazole hydrochloride, a potential psychotherapeutic agent, was studied in rats and dogs. Rats were given a single oral or i.p. dose, while dogs received the drug orally or i.v..Radioactivity in plasma samples and excreta was determined by liquid scintillation counting. In addition, 14C-levels in various rat tissues were estimated. The drug appeared to be well absorbed in both species. The 14C-levels were highest in liver and lung and lowest in plasma. Excretion was primarily urinary and was more complete within the first 96 hours in the rat than in the dog, suggesting a longer 14C half-life in the dog. No evidence was obtained for demethylation of the drug. 6 references. (Author abstract)

000259 Murakami, Hiroko; Kaji, Eiko; Segawa, Tomio. Department of Pharmacology, Institute of Pharmaceutical Sciences, Hiroshima University, School of Medicine, Hiroshima 734, Japan **Influences of verapamil, X-537A, A-23187 and adenosine 3',5'-cyclic monophosphate on release of 5-hydroxytryptamine from rat brain slices.** Japanese Journal of Pharmacology (Kyoto). 28(4):589-596, 1978.

The influences of verapamil, the ionophores X-537A and A-23187, and cyclic adenosine monophosphate (AMP) on the release of tritiated 5-hydroxytryptamine (5-HT) taken up into male Wistar rat brain slices were examined. Incubation with 40mM postassium chloride induced tritium release that was dependent on the presence of calcium ions (Ca2). Verapamil, which blocks Ca2 influx in excitable tissues, decreased potassium induced release of 5-HT. Tritium release induced

000260 Myers, R. D.; Ruwe, W. D. Departments of Psychological and Biological Sciences, Purdue University, Lafayette, IN 47907 **Thermoregulation in the rat: deficits following 6-OHDA injections in the hypothalamus.** Pharmacology Biochemistry and Behavior. 8(4):377-385, 1978.

The effect of 6-hydroxydopamine (6-OHDA) introduced into the catecholamine sensitive area of the anterior hypothalamus on the thermoregulatory capacity of the rat was studied. Bilateral microinjections of 6-OHDA were made in a volume of 0.5-

0.75mcl through chronically implanted cannulae into anterior hypothalamic, preoptic loci. Sites were selected at which 1.0to 12.5mcg of norepinephrine (NE) had previously elicited a fall in the rat's body temperature. After 2.0to 6.0mcg of 6-OHDA were injected in the same volume at the same loci, a comparable hypothermia ensued. When the rats were exposed repeatedly for one-hour intervals to an environmental temperature of either 35.0or 8.0degrees C, they were unable to thermoregulate against the heat and their colonic temperature rose. In some experiments, the rats also failed to defend adequately against the cold, but mainly following the injection of the higher doses of 6-OHDA. The intakes of food and water were generally suppressed; this was accompanied by a transient decline in bodyweight. Overall, the severity, duration, and direction of the thermoregulatory impairment depended upon the anatomical site of injection and the dose regimen of the neurotoxin employed. Results offer further evidence that an intact catecholaminergic pathway within the anterior hypothalamus is required for the rat's physiological control of heat loss in a warm environmental temperature. 40 references. (Author abstract)

000261 Nagayama, Haruo; Takagi, Akinori; Sakurai, Yukihiko; Nishiwaki, Kenzaburo; Takahashi, Ryo. Department of Neuropsychiatry, Nagasaki University School of Medicine, Nagasaki, 852, Japan **Chronopharmacological study of neuroleptics. II. Circadian susceptibility rhythm to chlorpromazine.** Psychopharmacology (Berlin). 58(1):49-53, 1978.

Chlorpromazine (CPZ) was administered to rats in varying combinations of dose and time to study daily fluctuations in CPZ's effects. Results indicate a daily fluctuation in the sedative effect of CPZ according to time of administration and the size of dosage. Under the conditions of light-dark reversal, a reversed curve of the daily fluctuation showed that the rhythm of light and dark controls the fluctuation externally. Also, no significant change was observed in plasma and brain levels of CPZ and its main metabolites between the 2 hours of administration during which the sedation periods differed. Daily fluctuation in the mortality rate of the rats varied according to the time of CPZ administration. Variability in CPZ effects according to time of administration may be explained by daily fluctuation of norepinephrine synthesis in the brain. 26 references. (Author abstract modified)

000262 Nagy, J. I.; Vincent, S. R.; Lehmann, J.; Fibiger, H. C.; McGeer, E. G. Division of Neurological Sciences, Dept. of Psychiatry, University of British Columbia, Vancouver, B.C. V6T 1W5, Canada **The use of kainic acid in the localization of enzymes in the substantia nigra.** Brain Research (Amsterdam). 149(2):431-441, 1978.

The selective destruction of neuronal perikarya via intracerebral injections of kainic acid was used to elucidate the cellular location of four neurotransmitter related enzymes in the substantia nigra (SN). Two weeks after intranigral injections of kainic acid, dopamine sensitive adenylate cyclase, glutamic acid decarboxylase (GAD), choline acetyltransferase (CAT) and acetylcholinesterase (AChE) were measured in the SN. Histological examination of the SN, and a reduction of striatal tyrosine hydroxylase (TH) activity by 95%, confirmed the extensive loss of neuronal cell bodies in the SN. Dopamine stimulation of adenylate cyclase was not reduced in the lesioned SN, supporting the view that dendritically released dopamine can regulate cyclic AMP synthesis in afferent terminals to these dendrites. Nigral GAD activity was significantly reduced by the lesions, suggesting that there are GAD containing perikarya in the SN. CAT activity was not affected by the kainic injections, indicating the absence of cholinergic perikarya in the SN. Nigral AChE activity was significantly decreased after kainic injections, thus confirming the presence of AChE within the nigral perikarya. The results suggest that dopamine sensitive adenylate cyclase and CAT are located within afferents to the SN, while GAD and AChE are found, to some extent at least, in neuronal soma of the SN. The differential effects of kainic acid on these enzymes suggest that this compound may be a useful neurochemical tool with which to determine the cellular distribution of enzyme systems in the central nervous system. 50 references. (Author abstract)

000263 Nahorski, Stefan R. Department of Pharmacology and Therapeutics, School of Medicine, University of Leicester, University Road, Leicester, LE1 7RH, England **Heterogeneity of cerebral beta-adrenoceptor binding sites in various vertebrate species.** European Journal of Pharmacology (Amsterdam). 51(3):199-209, 1978.

Binding assays showed that tritiated dihydroalprenolol (3H-DHA) binds to cerebral membranes of the frog, chick, rat, mouse, rabbit, and human with a dissociation equilibrium constant of about 1nM and displays characteristics indicative of an interaction with beta-adrenoceptors. However, the maximum number of specific binding sites labeled by 3H-DHA varied substantially across species, with the chick and mouse having the highest and the frog the lowest density. Structure/activity relationships of adrenergic agents in inhibiting specific 3H-DHA binding suggest that membrane sites from all species had similar affinities for nonselective beta-adrenergic agents, but several drugs that are selective for beta1-andrenoceptors showed considerably higher affinities for mammalian membrane sites than for avian or amphibian sites. It is suggested that all beta-adrenoceptor binding sites in frog and chick cerebral tissue have properties resembling beta2-receptors, while beta1-adrenoceptors and beta2-adrenoceptors coexist in a ratio of 7/3 in mammalian cerebral cortex. 28 references. (Author abstract modified)

000264 Nandy, K.; Schneider, F. H. Geriatric Research, Educational and Clinical Center, V.A. Hospital, 200 Springs Rd., Bedford, MA 01730 **Effects of Hydergine on aging neuroblastoma cells in culture.** Pharmacology (Basel). 16(Suppl. 1):88-92, 1978.

In a study of the effects of Hydergine on aging mouse neuroblastoma cells in culture, exposure of mouse neuroblastoma cells in culture to low pH for 8 days caused a sixfold increase in cell lipofuscin pigment. Pigment content was measured as the percent of cells having clumps of acid-phosphatase-staining material. Hydergine, between 0.1and 3mcg/ml, caused a concentration-related decrease in pigment content. Hydergine also stimulated neurite formation in cells in regular pH medium and was slightly toxic to cells in low pH medium. Results support the use of neuroblastoma cells as an in vitro model for age pigment studies. 18 references. (Author abstract modified)

000265 Neal, H.; Bradley, P. B. Lilly Research Centre Ltd., Erl Wood Manor, Windlesham, Surrey GU20 6PH, England **Electrophysiological studies with a new anti-depressant drug: comparison of the effects of viloxazine (ICI 58,834) with three tricyclic anti-depressants in the encephale isole.** Neuropharmacology (Oxford). 17(10):835-849, 1978.

The effects of viloxazine were compared with those of three tricyclic antidepressants, imipramine (IMI), amitriptyline (AMI), and desmethylimipramine (DMI), on the electrocorticogram (ECoG) of encephale isole cats. IMI and AMI caused increasing synchronization in the ECoG with increasing dose, until eventually the effects of sensory stimulation were blocked. DMI caused synchronization at low doses and desynchronization at higher doses. Viloxazine caused desynchronization at low doses and synchronization at higher doses. In cats pretreated with parachlorophenylalanine (PCPA) with desynchronized ECoG, IMI and AMI induced synchronization, but higher doses were

required in PCPA treated animals than in untreated animals. DMI and viloxazine had no effect on the ECoG in PCPA treated animals. In animals pretreated with alpha-methyl-para-tyrosine with synchronized ECoGs, the tricyclics enhanced synchrony, while viloxazine caused pronounced desynchronization. It is suggested that the ECoG synchronizing effects of the antidepressants drugs may be related to stimulation of 5-hydroxytryptamine mechanisms in the brain, while desynchronizing effects are related to stimulation of noradrenergic systems. The ECoG effects of IMI and AMI appear to be mainly on serotonergic mechanisms, those of viloxazine predominantly on noradrenergic mechanisms, and those of DMI equally on both. 30 references. (Author abstract modified)

000266 Neal, H.; Keane, P. E. Lilly Research Centre Limited, Erl Wood Manor, Windlesham, Surrey GU20 6PH, England **The effects of local micro injections of opiates and enkephalins into the forebrain on the electrocorticogram of the rat.** Electroencephalography and Clinical Neurophysiology (Amsterdam). 45(5):655-665, 1978.

The effects of local intracerebral injection of opiates and enkephalins on electrocorticogram (ECoG) activity were investigated in male Wistar rats. The most pronounced changes in the ECoG were observed after injection of etorphine into the caudate nucleus or basal forebrain, whereas thebaine produced comparatively minor changes. Morphine and codeine showed intermediate potency. Naloxone was inactive when administered alone, but markedly attenuated the response to morphine when administered simultaneously and reversed the morphine response when administered after morphine. The endogenous opiate compound enkephalin and the synthetic analogue D-ala2-met5-encamide also induced electrocortical changes that were sensitive to naloxone. It is suggested that the opiates and enkephalins act at the same site and that opiate mechanisms may interact with dopaminergic systems. 37 references. (Author abstract modified)

000267 Nemeroff, Charles B.; Bissette, Garth; Greeley, George H.; Mailman, Richard B.; Martin, Joseph B.; Brazeau, Paul; Kizer, John S. Biological Sciences Research Center, University of North Carolina School of Medicine, Chapel Hill, NC 27514 **Effects of acute administration of monosodium-L-glutamate (MSG), atropine or haloperidol on anterior pituitary hormone secretion in the rat.** Brain Research (Amsterdam). 156(1):198-201, 1978.

The effects of acute administration of monosodium-L-glutamate (MSG) on the release of anterior pituitary hormones were investigated in adult male rats. MSG produced a significant increase in serum prolactin levels and a significant decrease in growth hormone levels; no changes in serum levels of follicle stimulating hormone or thyroid stimulating hormone were observed. Neither haloperidol nor atropine blocked the acute effects of MSG on serum prolactin and growth hormone, indicating that these effects were not mediated by postsynaptic cholinergic or dopaminergic receptors. Results indicate that MSG administered to adult animals exerts neuroendocrinological effects similar to those induced by the neonatal destruction of arcuate perikarya. MSG appears to act in the adult by inactivating the tuberoinfundibular systems rather than by stimulating arcuate nucleus dopamine neurons. 18 references.

000268 Norcross, K.; Spehlmann, R. Veterans Administration Lakeside Hospital, Chicago, IL 60611 **Decreased sensitivity of caudatal neurons to microiontophoretic dopamine in dopamine-depleted caudate nucleus.** Brain Research (Amsterdam). 156(1):175-180, 1978.

To evaluate changes in receptor sensitivity produced by striatal dopamine (DA) depletion, the effects of iontophoretic DA on neuronal responses to stimulation of the caudate nucleus (CN) were determined in cats with and without longstanding unilateral nigrostriatal lesions. The lesioned animals showed decreased neuronal sensitivity to both the excitatory and depressant effects of DA. Changes in receptor sensitivity were restricted to the CN on the side of the lesion. Results suggest that the altered effect of DA is due to a decrease in the number of DA receptors, without a change in DA receptor affinity, following the lesion. 19 references.

000269 Norcross, K.; Spehlmann, R. Veterans Administration Lakeside Hospital, Chicago, IL 60611 **A quantitative analysis of the excitatory and depressant effects of dopamine on the firing of caudatal neurons: electrophysiological support for the existence of two distinct dopamine-sensitive receptors.** Brain Research (Amsterdam). 156(1):168-174, 1978.

The effects of iontophoretic application of dopamine (DA) and DA antagonists on the firing of caudate nucleus (CN) neurons driven by electrical stimulation of the CN near the recording site and of major afferents to the CN were investigated in cats. DA increased firing driven by CN or afferent stimulation in most CN neurons and depressed firing in a small number of other neurons. A comparison of dose/response curves for the excitatory and depressant DA effects showed that a 50% increase in firing was obtained with DA currents five times weaker than those required for a 50% decrease in firing. Application of the DA antagonists haloperidol, fluphenazine, or chlorpromazine in low doses did not alter the response to CN stimulation in the majority of neurons tested. However, the antagonists diminished the excitatory and depressant effects of DA on the neuronal responses. Results support the existence of two distinct DA sensitive receptors. 30 references.

000270 Nowak, Jerzy Z.; Pilc, Andrzej; Maslinski, Czeslaw. Department of Biogenic Amines, Institute for Pharmacology of the Polish Academy of Sciences, 60, Narutowicza Str., 90-136 Lodz, Poland **An interaction of histamine H2-receptor antagonists with the noradrenergic system in rat brain.** European Journal of Pharmacology (Amsterdam). 51(1):71-75, 1978.

Intraventricular administration of 50mcg of burimamide or 250mcg of either metiamide or cimetidine decreased the noradrenaline (NA) concentration in female Wistar rat hypothalamus by nearly 30%. Cimetidine did not significantly influence either dopamine or 3,4-dihydroxyphenylacetic acid levels in striatum. Cimetidine and metiamide significantly potentiated locomotor activity of tranylcypromine treated rats; this effect was antagonized by phentolamine. It is concluded that the three histamine H2 receptor antagonists released NA in rat brain. 6 references. (Author abstract)

000271 O'Sullivan, P. A.; Matyas, T. A.; King, M. G. University of Newcastle, Newcastle, N.S.W., 2308, Australia **Conditioning under carbolonium bromide and d-tubocurarine chloride paralysis.** Pharmacology Biochemistry and Behavior. 8(4):357-364, 1978.

Classical heartrate (HR) conditioning under neuromuscular blockade by d-tubocurarine chloride was compared to that of a more specific blocker, carbolonium bromide, to help resolve the equivocal findings of past research using d-tubocurarine chloride as a control procedure in HR conditioning. Both treatment groups were compared to a placebo group. The results indicate that carbolonium bromide and placebo-treated rats acquired deceleratory cardiac conditional responses, but rats treated with d-tubocurarine chloride did not. Unconditional acceleratory responses were found in all groups. The findings are discussed in relation to classical conditioning and the psychopharmacology of neuromuscular blockade. 47 references. (Author abstract)

000272 Olpe, Hans-Rudolf; Koella, Werner P. Biology Research Laboratories, Pharmaceuticals Division, Ciba-Geigy Ltd., CH-4002 Basel, Switzerland **The effect of some neuroleptics on the interaction of cortically and nigrally evoked potentials in the rat striatum.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 303(2):165-170, 1978.

The interaction of corticofugal and nigrofugal inputs to the striatum of the rat, as well as the modification of this interaction by neuroleptics were investigated using the technique of evoked potentials. Repetitive, unilateral stimulation of the substantia nigra inhibited potentials which were evoked from the ipsilateral rostral cortex and recorded from the ipsilateral striatum. The inhibition was antagonized by low doses of various intraperitoneally administered neuroleptics such as: pimozide, haloperidol, chlorpromazine, and thioridazine. These findings are discussed in relation to the existing controversy regarding the mode of action of dopamine in the striatum. 34 references. (Author abstract modified)

000273 Opalek, Alfred Allen. Medical College of Pennsylvania **Age related responses of the rat cerebral cortex cyclic AMP system. (Ph.D. dissertation).** Dissertation Abstracts International. 39(1):215-B, 1978. Ann Arbor, Univ. Microfilms No. 7809292. 198 p., 1978.

In a survey of the cyclic AMP (c-AMP) system in cerebral cortical slices of male Fisher rats, determined by measurements of the conversion of 3H-adenine into 3H-c-AMP under various stimulus conditions, it was found that pattern as well as magnitude of responsiveness of the cerebral cortex c-AMP system changes with age. In timid dose response experiments, norepinephrine (NE) and adenosine each stimulated c-AMP formation to twice the age specific control values. In multiple stimulation experiments, slices were exposed for 12.5minutes to the following agents both singly and in pairs: adenosine, histamine, NE, glutamate, and prostaglandin El in the presence or absence of calcium. The restimulation reference experiments illuminate many individual age dependent and calcium dependent relations. (Journal abstract modified)

000274 Paiement, J. Ecole de Pharmacie, Universite Laval, Quebec, Canada G1K 7P4 **Effect of local anesthetics on electrically excitable bilayer lipid membranes.** Journal of Pharmaceutical Sciences. 67(7):965-967, 1978.

The effect of three local anesthetics (procaine hydrochloride, tetracaine, and lidocaine) on the action potential of electrically excitable bilayer lipid membranes was studied, to elucidate the molecular mode of action of drugs that modify conduction along the nerve membrane. The synthetic action potential of bilayers was abolished at drug concentrations roughly identical to those abolishing the action potential in nerves. The threshold depolarizing constant current pulse triggering the synthetic action potential was increased by slightly lower concentrations of the drugs. It is suggested that the anionic channels, which are responsible for the rising phase of the action potential in bilayers, are affected preferentially by these drugs. 16 references. (Author abstract)

000275 Palmer, G. C.; Jones, D. J.; Medina, M. A.; Palmer, S. Jo; Stavinoha, W. B. Department of Pharmacology, University of South Alabama College of Medicine, Mobile, AL 36688 **Actions in vitro and in vivo of chlorpromazine and haloperidol on cyclic nucleotide systems in mouse cerebral cortex and cerebellum.** Neuropharmacology (Oxford). 17(7):491-498, 1978.

Three procedures were used to study the action of chlorpromazine (CPZ) and haloperidol on adenylate cyclase/cyclic nucleotide systems in the male Swiss-Webster mouse cerebral cortex and cerebellum. CPZ was more effective than haloperidol in reducing the activation of adenylate cyclase by norepinephrine (NE) in incubated tissue slices. NE stimulated adenylate cyclase in homogenates of cerebellum and cortex, while dopamine (DA) was active only in cortex; CPZ exerted greater antagonism than haloperidol on both the NE and DA sensitive enzymes. DA responsive enzymes were blocked by both agents to a greater extent than were NE responsive enzymes. Acute in vivo injections CPZ and haloperidol diminished the steady state levels of cyclic adenosine monophosphate (AMP) and cyclic guanosine monophosphate, but subchronic administration (24-48) hours usually resulted in elevated cyclic AMP amounts. Results indicate that neuroleptics inhibit neurohumorally induced activation of adenylate cyclase both in vivo and in vitro. Additional factors, such as inhibition of phosphodiesterase or enhanced receptor sensitivity, appear to be involved in the effects of subchronic injections of the two drugs. 44 references. (Author abstract modified)

000276 Palmer, M. R.; Morris, D. H.; Taylor, D. A.; Stewart, J. M.; Hoffer, B. J. Department of Pharmacology, University of Colorado Medical Center, Denver, CO 80262 **Electrophysiological effects of enkephalin analogs in rat cortex.** Life Sciences. 23(8):851-860, 1978.

The effects of microiontophoretically applied methionine enkephalin (ME) analogs on the spontaneous and evoked activity of Sprague-Dawley rat cerebral cortex neurons (CX) were compared with the effects of the analogs in vitro. ME slowed discharge in 65% of the 62 CX tested; spontaneous discharge and activity evoked by acetylcholine (ACh) or glutamtate were affected. Most of the responsive cells were deeper than 500microns and were excited by ACh. Antidromic spikes were elicited in many of these neurons by pyramidal tract stimulation. The electrophysiological effects of D-A1a2-ME-amide, a more potent analog in vitro, were similar to those of ME in the parietal CX, but D-A1a2-ME-amide was much more potent than ME on frontal CX. However, N-acetyl-D-A1a2-Lys3-ME-amide, which has low potency in vitro, had little effect on CX. The depressions induced by ME or the D-A1a2 derivative were readily and reversibly antagonized by prior iontophoretic administration of naloxone. It is concluded that opiate receptor interactions may play a role in electrophysiological responses to iontophoretically administered ME and that the deeper cholinoceptor cortical cells, possibly pyramidal neurons, may be preferentially affected. 39 references. (Author abstract modified)

000277 Palmer, Michael R.; Klemm, William R. Department of Biology, Texas A&M University, College Station, TX 77843 **Adrenergic alteration of morphine-induced suppression of sciatic-evoked unit responses in the central grey.** Progress in Neuro-Psychopharmacology. 2(3):337-347, 1978.

The role of adrenergic receptors in the pathways that mediate morphine induced depression of peripherally evoked unit activity in the central gray was investigated in Wistar rats. Morphine inhibited sciatic evoked unit impulse activity in the central grey, and this effect was antagonized by naloxone. Phentolamine, an alpha-adrenergic blocker, also caused a naloxone reversible suppression of sciatic evoked unit increases in the central grey. Propranolol, a beta blocker, was without effect when given alone. Propranolol, but not phenotolamine, prevented the naloxone reversible morphine suppression of evoked activity. These results indicate that alpha and beta adrenergic receptors have different roles in the mediation of morphine action: phentolamine may be synergistic with endorphins, while propranolol may be antagonistic. Implications of these findings for testable models of opiate mechanisms are discussed. 35 references. (Author abstract modified)

000278 Pandey, B. R.; Raman, K.; Barthwal, J. P.; Parmar, S. S. Jawaharlal Nehru Laboratory of Molecular Biology, Department of Pharmacology, King George's Medical College, Lucknow 226003, India **Anticonvulsant activity and monoamine oxidase inhibitory and antihemolytic properties of some newer 4-phenylpiperidino carbamides.** Research Communications in Chemical Pathology and Pharmacology. 22(1):199-202, 1978.

Six 1-(N-acetyl(4-phenylpiperidino))-3-aryl carbamides were synthesized, characterized, and evaluated for anticonvulsant, monoamine oxidase inhibitory, and antihemolytic properties. These compounds (100mg/kg ip) provided 10-80% protection against pentylenetetrazol induced seizures in mice. All carbamides (1mM) inhibited in vitro activity of rat brain monoamine oxidase (by 34-82%) and provided 18-51% protection against in vitro hypoosmotic hemolysis of human red blood cells. The low toxicity of these carbamides was reflected in the high approximate median lethal dose values. 8 references. (Author abstract)

000279 Parkinson, D.; Callingham, B. A. Department of Pharmacology, University of Cambridge, Hills Road, Cambridge, CB2 2QD, England **Post-mortem stability of monoamine oxidase in rat tissues.** Journal of Pharmacy and Pharmacology (London). 30(10):648-650, 1978.

Changes in monoamine oxidase (MAO) activity in homogenates of male Wistar rat brain, heart, and liver after postmortem storage of the whole animal at 4 degrees were studied. In the brain, there was a significant reduction in MAO activity with tyramine 5-hydroxytryptamine, or benzylamine as substrate, but no significant reduction was observed when beta-phenethylamine was used as substrate. In the heart, only the activity towards benzylamine fell significantly after death. In the liver, MAO activity toward all four substrates fell significantly within 24 hours, but only MAO-B activity showed a significant reduction 8 hours after death. When MAO activity of the tissues was measured in terms of protein content (specific activity), no significant reduction in specific MAO activity was seen in brain, heart, or liver with any of the substrates used. Results indicate that measurement of the specific activity of MAO in postmortem material provides a reliable guide to MAO activity at the time of death. 8 references.

000280 Patrick, Graham A.; Dewey, William L.; Huger, Frank P.; Daves, Ellen D.; Harris, Louis S. Department of Pharmacology, MCV Box 726, Virginia Commonwealth University, Richmond, VA 23298 **Disposition of morphine in chronically infused rats: relationship to antinociception and tolerance.** Journal of Pharmacology and Experimental Therapeutics. 205(3):556-562, 1978.

Levels of morphine in brain and other biological materials were measured fluorometrically, and relationships were drawn to tail flick activity and to tolerance development in rats treated chronically with the narcotic by intraperitoneal infusion. Brain morphine concentration and tail flick latency both increased with increasing dosage over the first 3 days of the 6-day infusion regimen. There was evidence of cellular tolerance within 24 to 48 hours after the beginning of infusion, with marked tolerance by day 6. Between days 3 and 6 a dispositional tolerance, evidenced by a dramatic fall in brain morphine concentration, also became apparent. After discontinuation of the infusion, the brain morphine dropped to extremely low levels by 24 hours, but significant tolerance to antinociceptive effects remained for 72 hours. Estimation of morphine in plasma, urine, peritoneal tissues, and feces suggested several possible explanations for the dispositional tolerance observed; these include increased conjugation of morphine, increased fecal elimination, and increased localization in muscle or peritoneal tissues with chronic infusion at relatively high doses. 20 references. (Author abstract)

000281 Pepeu, G.; Mantovani, P. Department of Pharmacology, University of Florence, Viale Morgagni 65, I-50134 Florence, Italy **Effect of bromocriptine on acetylcholine output from the cerebral cortex.** Pharmacology (Basel). 16(Suppl. 1):204-206, 1978.

The effect of bromocriptine on acetylcholine (ACh) output from the cerebral cortex was investigated in anesthetized rats. Bromocriptine caused a brief decrease in ACh output at the dose of 0.1mg/kg i.p.,and a dose related long-lasting increase at doses from 1.25 to 10mg/kg i.p. Apomorphine elicited an increase in ACh output when injected intraperitoneally at doses from 0.1to 10mg/kg. When bromocriptine was administered to rats in which a septal lesion had been made 12 days prior to the test, no increase in ACh output was observed. It is suggested that bromocriptine stimulates a cortical cholinergic pathway originating from or passing through the septum. 9 references. (Author abstract)

000282 Persson, Sven-Ake. Department of Pharmacology, University of Umea, S-901-87 Umea, Sweden **LSD and related drugs as DA antagonists: receptor-mediated effects on the synthesis and turnover of DA.** Life Sciences (Oxford). 23(5):523-526, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, the effects of d-lysergic acid diethylamide (LSD) and related drugs on dopamine (DA) synthesis and turnover are reported. Several agents structurally similar to LSD increased in vivo tyrosine hydroxylation in the striatum of male Sprague-Dawley rats. Psilocybin (50mg/kg, intraperitoneal) and N,N-dimethyl-tryptamine (50mg/kg, intraperitoneal) caused a shortlasting increase in DOPA accumulation, while mescaline (10-100mg/kg, intraperitoneal) did not increase DOPA accumulation. A marked increase of DOPA accumulation was observed after cyproheptadine, a 5-hydroxytryptamine (5-HT) antagonist. The effects of LSD and structurally related drugs on the DOPA accumulation in the striatum appear to be mediated via DA antagonism at the receptor level. However, these agents may control the DOPA accumulation via 5-HT receptors rather than DA receptors. A control of DOPA accumulation via receptors other than DA receptors appears to be predominant after treatment with N,N-dimethyltryptamine or psilocybin. 12 references. (Author abstract modified)

000283 Petersen, Erling N.; Bechgaard, Erik; Sortwell, Rodney J.; Wetterberg, Lennart. Research Laboratories, A/S Ferrosan, Sydmarken 5, DK-2860 Soeborg, Denmark **Potent depletions of 5HT from monkey whole blood by a new 5HT uptake inhibitor, paroxetine (FG 7051).** European Journal of Pharmacology (Amsterdam). 52(1):115-119, 1978.

The potent 5-hydroxytryptamine (5-HT) uptake inhibitor paroxetine was administered to rhesus monkeys in doses of 1.0, 2.5, or 7.5mg/kg by oral gavage once daily for 13 weeks. Blood samples for analysis of 5-HT in whole blood and paroxetine in plasma were taken prior to and after 1, 4, and 13 weeks of treatment. The lowest dose caused 30% depletion of 5-HT in whole blood with a level of paroxetine in plasma below 2ng/ml. The intermediate dose produced an 85% depletion of 5-HT and a steady state plasma paroxetine concentration of about 5ng/ml; the 7.5mg/kg dose caused a 93% depletion of 5-HT and a steady state plasma paroxetine concentration of 100-450ng/ml. There was no concentration dependent 5-HT reduction with the highest dose level, suggesting that maximal depletion was produced by concentrations below 100ng/ml. Results indicate that paroxetine is a strong depletor of 5-HT from whole blood of monkeys. The effect of the drug reached its maximum within 1 week and no tolerance developed during 13 weeks. The possible

clinical use of paroxetine in the treatment of depression is discussed. 22 references. (Author abstract modified)

000284 Peterson, George R.; Covault, H. Patrick; Hostetler, Russell M. Department of Pharmacology, Wright State University School of Medicine, Dayton, OH 45435 **Acute inhibition of microsomal drug metabolism by propoxyphene in narcotic tolerant/dependent mice.** Life Sciences (Oxford). 22(23):2087-2096, 1978.

A series of in vivo and in vitro studies was undertaken comparing propoxyphene and SKF 525-A (a prototypical inhibitor of hepatic microsomal mixed function oxidases) in the inhibition of drug metabolism in morphine tolerant/dependent mice. In vitro, both propoxyphene and SKF 525-A inhibited the activity of aminopyrine N-demethylase competitively in hepatic microsomes, and both were weaker, noncompetitive inhibitors of aniline hydroxylase activity. In vivo, equimolar doses of both substances inhibited both of the above monooxygenases in the 10,000g supernatant fractions of liver. Propoxyphene was 40 to 50% as potent an inhibitor of these activities as SKF 525-A. A dose (300mg/kg) of propoxyphene napsylate, shown to prevent narcotic abstinence signs with no observable toxicity in withdrawing mice, significantly prolonged the blood levels of injected pentobarbital, and tripled pentobarbital sleeping time in these animals. When administered at 300mg/kg chronically, propoxyphene acted as an inducer of its own metabolism. 29 references. (Author abstract modified)

000285 Peyrin, L.; Cottet-Emard, J. M.; Javoy, F.; Agid, Y.; Herbert, A.; Glowinski, J. Laboratory of Physiology, UER Medicale Grange Blanche, Lyon, France **Long-term effects of unilateral 6-hydroxydopamine destruction of the dopaminergic nigrostriatal pathway on the urinary excretion of catecholamines (dopamine, norepinephrine, epinephrine) and their metabolites in the rat.** Brain Research (Amsterdam). 143(3):567-572, 1978.

The urinary excretion of catecholamines and catecholamine metabolites was measured in rats several months after unilateral destruction of the dopaminergic nigrostriatal pathway with 6-hydroxydopamine. Unilateral destruction of the nigrostriatal pathway reduced the urinary content of conjugated forms of homovanillic acid (HVA) and dihydroxyphenylacetic acid (DOPAC) but not of dopamine (DA) and methoxytyramine. If striatal HVA and DOPAC also contribute significantly to the urinary content of the conjugated forms of these compounds in humans, the estimation of conjugated HVA and DOPAC in urine should represent a simple, noninvasive, and useful tool to assess the state of central dopaminergic neurons in clinical disorders. Results suggest that degeneration of the nigrostriatal dopaminergic neurons in Parkinsonian patients may contribute to the changes in DA metabolites observed in urine. 22 references.

000286 Phillis, J. W.; Kirkpatrick, J. R.; Said, S. I. Dept. of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada **Vasoactive intestinal polypeptide excitation of central neurons.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(2):337-340, 1978.

Vasoactive intestinal polypeptide (VIP) was tested on neurons in the rat sensory motor cerebral cortex and on the isolated hemisected toad spinal cord. Iontophoretically applied VIP excited deep, spontaneously active cortical neurons, including identified corticospinal neurons. The excitation had a latency of onset varying from several seconds to over 1 minute, and often lasted for a minute or longer after cessation of the application. Desensitization of the effect occurred with repeated applications. VIP caused a depolarization of motoneurons and dorsal root terminals in the isolated amphibian spinal cord. The effects of VIP on both preparations were comparable with those of another peptide, substance-P. 13 references. (Author abstract modified)

000287 Pizzi, William J.; Tabor, Josephine M.; Barnhart, June E. Department of Psychology, Northeastern Illinois University, Chicago, IL 60625 **Somatic, behavioral, and reproductive disturbances in mice following neonatal administration of sodium L-aspartate.** Pharmacology Biochemistry and Behavior. 9(4):481-485, 1978.

Increasing doses of sodium L-aspartate (ASP) were administered to neonatal ICR mice from days 2 to 11 after birth. When adult, the ASP treated animals showed large increases in body weight over controls, along with stunted body length. The ASP treated mice also showed decreases in locomotor and exploratory behavior. Reproductive dysfunction occurred in both male and female ASP treated mice; females had fewer pregnancies and smaller litters, while males showed reduced fertility. Evidence of multiple endocrine dysfunction in ASP treated animals was reflected in decreased pituitary, thyroid, ovary, and testes weights and delayed onset of puberty in females. Results indicate that ASP produces a syndrome similar to that seen following the administration of monosodium glutamate. 14 references. (Author abstract modified)

000288 Poat, Judith A.; Woodruff, G. N.; Watling, K. J. Department of Physiology and Pharmacology, University of Southampton, Bassett Crescent East, Southampton S09 3TU, England **Direct effect of a nomifensine derivative on dopamine receptors.** Journal of Pharmacy and Pharmacology (London). 30(8):495-497, 1978.

The effects of homifensine, 4'-hydroxynomifensine and 3',4'-dihydroxynomifensine on dopamine receptors in rat striatum and nucleus accumbens was studied using the dopamine sensitive adenylate cyclase assay. Nomifensine and its 4'-hydroxy metabolite were both inactive as dopaminergic agonists. However,3',4'-dihydroxynomifensine was found to be a potent agonist, two to four times less active than dopamine. The effects of both dopamine and the dihydroxy metabolite were blocked by fluphenazine. It is concluded that the dopaminergic activity of 3',4'-dihydroxynomifensine is dependent upon the presence of the two hydroxyl groups. 18 references. (Author abstract modified)

000289 Pollard, H.; LLorens, C.; Schwartz, J. C.; Gros, C.; Dray, F. Unite 109 de Neurobiologie, Centre Paul Broca de l'INSERM, 2ter rue d'Alesia, F-75014 Paris, France **Localization of opiate receptors and enkephalins in the rat striatum in relationship with the nigrostriatal dopaminergic system: lesion studies.** Brain Research (Amsterdam). 151(2):392-398, 1978.

The localization of opiate receptors and enkephalinsenk in the rat striatum was studied in relationship to the nigrostriatal dopaminergic system. Previous studies which indicate the presence of opiate receptors on dopamine (DA) neurons were extended by assessing the affects of: 1) more extensive degenerations of DA neurons, produced by intranigral 6-hydroxydopamine or hemisections, on strial end binding sites as well as on the levels of Met-enk and Leu-enk 2) intrastriatal administration of kainic acid on the same parameters; and 3) infusion of 6-hydroxydopamine within the substantia nigra on the opiate receptors in this structure. It is concluded that: 1) one third of striatal opiate receptors are localized on dopaminergic neurons while the remaining two thirds are localized on neurons intrinsic to or emanating from the striatum, 2) opiate receptors might also be present on DA cells in substantia nigra, and 3) both cell bodies and nerve endings containing enk are probably present in the striatum. It is suggested that the primary action of opiates be regarded as an inhibition of DA release. 35 references.

000290 Pomeranz, Bruce. Department of Zoology, University of Toronto, Toronto, Ontario, Canada **Do endorphins mediate acupuncture analgesia?** Advances in Biochemical Psychopharmacology. 18:351-359, 1978.

The role of endorphins in acupuncture analgesia was investigated in cats and mice. Acupuncture analgesia was blocked by 0.3mg/kg iv naloxone in cats and by 1mg/kg ip naloxone in mice. Removal of the pituitary, a major source of beta-endorphin, also abolished acupuncture analgesia in mice. In genetic studies, C57BL/By mice with normal morphine sensitivity showed normal acupuncture analgesia, whereas CBXK mice with low morphine sensitivity showed little or no analgesia after acupuncture. These results indicate that acupuncture analgesia is mediated by endorphins. It is hypothesized that acupuncture activates deep muscle receptors that drive a sensory system to release endorphins from the pituitary or midbrain. Pituitary endorphins are then released into the blood and reenter the brain to block synaptic transmission in the nociceptive pathways. Alternatively, enkephalin in the midbrain may mediate a pain control system that is activated by acupuncture. 10 references.

000291 Portaleone, P. Istituto di Farmacologia, Corso Raffaello 30, I-10125 Turin, Italy **Bromocriptine and hydergine: a comparison on striatal or hypothalamic adenylate cyclase activity.** Pharmacology (Basel). 16(Suppl. 1):207-209, 1978.

The effects of bromocriptine and hydergine on striatal and hypothalamic adenylate cyclase activity in rats were compared. Rats treated with bromocriptine (5mg/kg) or with hydergine (3mg/kg) showed a stimulation of adenylate cyclase activity in the striatum, but not in the hypothalamus. The competitive action bromocriptine and hydergine had on the dopamine stimulating effect of the adenylate cyclase activity was also studied. There was a definite inhibition of the dopamine stimulating effect both in the striatum and in the hypothalamus of rats treated with bromocriptine. In those treated with hydergine an inhibiting effect on the striatum and an increased dopamine stimulation on the hypothalamus were observed. 8 references. (Author abstract)

000292 Pradhan, Sikta; Roy, S. N.; Pradhan, S. N. Department of Pharmacology, Howard University College of Medicine, Washington, DC 20059 **Correlation of behavioral and neurochemical effects of acute administration of cocaine in rats.** Life Sciences. 22(19):1737-1744, 1978.

Effects of cocaine were investigated on spontaneous motor activity (SMA) and stereotypy as well as on the concentrations of norepinephrine (NE), dopamine (DA), serotonin (5-HT), and acetylcholine (ACh) in the discrete brain areas, such as the caudate nucleus (CN), diencephalon-midbrain (DM), and ponsmedulla (PM) in rats. After injection in single doses, the SMA was increased, usually reaching its peak between 10-20 minutes, and then decreased gradually. Stereotypy and its components gradually increased to their maximum at about 50-60 minutes and remained at that level during the rest of the 120 minute session. NE levels slightly increased in the DM and PM at 10 minutes postdrug after which they decreased at 20 minutes. DA levels in the CN and DM were increased markedly at 20 minutes postdrug and decreased at 40 minutes. 5-HT levels in DM and PM decreased gradually up to 20 minutes, then began to increase. ACh level in the CN was gradually increased at 40 minutes and then decreased. It appears that cocaine-induced hyperactivity and stereotypy followed release of NE and DA after their accumulation in the respective brain areas. 37 references. (Author abstract modified)

000293 Preiksaitis, Harold G.; Kunos, George. Department of Pharmacology and Therapeutics, McGill University, Montreal, Quebec Canada, H3G 1Y6 **Adrenoceptor-mediated activation of liver glycogen phosphorylase: effects of thyroid state.** Life Sciences (Oxford). 24(1):35-41, 1978.

The effects of altered thyroid state on the adrenergic activation of rat liver glycogen phosphorylase were studied in hepatocytes isolated from normal thyroidectomized and thyroxine treated rats. Basal phosphorylase- a activity was similar in the three groups. In normal rats, the order of potency of agonists was adrenaline greater than phenylephrine greater than isoproterenol, and the effect of adrenaline was blocked by dihydroergocryptine or phenoxybenzamine but not by propranolol. These results indicate that in the normal rat activation of this enzyme occurs via alpha-adrenoceptors. Thyroxine treatment increased sensitivity to all three agonists. Thyroidectomy dramatically altered the pattern of activation of agonists. Activation of phosphorylase was not mediated via beta-adrenoceptors. The effect of thyroidectomy on the adrenoceptor response pattern of the liver developed slowly and was opposite to the shift from beta to alpha previously observed in the heart. These findings indicate that hypothyroidism in rats changes activation of liver glycogen phosphorylase from alpha to beta type response and that the direction of thyroid dependent changes in receptor balance is tissue dependent. 26 references. (Author abstract modified)

000294 Price, M. T.; Olney, J. W.; Mitchell, M. V.; Fuller, T.; Cicero, T. J. Washington University School of Medicine, Department of Psychiatry, St. Louis, MO 63110 **Luteinizing hormone releasing action of N-methyl aspartate is blocked by GABA or taurine but not by dopamine antagonists.** Brain Research (Amsterdam). 158(2):461-465, 1978.

The luteinizing hormone (LH) releasing action of N-methyl aspartate (NMA) was totally blocked by simultaneous subcutaneous administration of the neuroinhibitory amino acids taurine and gamma-aminobutyric acid (GABA), but was not affected by the dopamine receptor blockers chlorpromazine or pimozide in male Holtzman rats. It is suggested that NMA influences the LH axis by interacting with excitatory receptors on the dendritic or somal surfaces of a subpopulation of neurons in the arcuate nucleus of the hypothalamus. These neurons may be cholinergic, but not dopaminergic. GABA and taurine may block the action of NMA not at the NMA excitatory receptor but at some other locus either on the same cell or on cells postsynaptic to it, thereby aborting the NMA stimulated chain of events that would normally result in hypothalamic secretion of LH releasing hormone and pituitary secretion of LH. 8 references.

000295 Puig, Margarita M.; Gascon, Pedro; Masacchio, Jose, M. Department of Pharmacology, New York University Medical Center, New York, NY 10016 **Electrically induced opiate-like inhibition of the guinea-pig ileum: cross-tolerance to morphine.** Journal of Pharmacology and Experimental Therapeutics. 206(2):289-302, 1978.

An electrically elicited opiate like inhibition of the guinea-pig ileum myenteric plexus/longitudinal muscle (MPLM) preparation was demonstrated. An inhibitory response (IR) was produced in this preparation by electrical stimulation at 5-20Hz, with the magnitude and duration of the IR determined primarily by the frequency and duration of the period of stimulation. Maximal IR was obtained with symmetrical biphasic stimuli of 2msec duration and supramaximal voltage at 20Hz applied for about 5 minutes. The IR was calcium dependent, could not be attenuated by washing, and was mediated by several components. About 55-70% of the IR could be reversed by specific narcotic antagonists, suggesting that it was produced by the release of endorphins. MPLM strips obtained from guinea-pigs made tolerant to morphine by subcutaneous implantantion of three pellets were cross tolerant to the opiate component of the

IR elicited by electrical stimulation. 41 references. (Author abstract modified)

000296 Quik, Maryka; Iversen, Leslie L. MRC Neurochemical Pharmacology Unit, Department of Pharmacology, Medical School, Hills Road, Cambridge CB2 2QD, England **Subsensitivity of the rat striatal dopaminergic system after treatment with bromocriptine: effect on (3H)spiperone binding and dopamine-stimulated cyclic AMP formation.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(2):141-145, 1978.

Repeated subcutaneous administration of the dopamine (DA) agonist bromocriptine (15mg/kg/day, for 1-7 days) in male Sprague-Dawley rats led to a time dependent decrease in the in vitro binding of (3H)spiperone to striatal membranes. Kinetic analysis of (3H)spiperone binding after 2 and 7 days of bromocriptine treatment showed a 25-50% reduction in the total number of binding sites, with no change in their affinity for spiperone. The accumulation of cyclic adenosine monophosphate (cAMP) in striatal slices in response to DA was also decreased after bromocriptine. Bromocriptine did not alter the DA sensitive adenylate cyclase in striatal homogenates or the cyclic nucleotide phosphodiesterase activity in striatal tissue. Incubation of striatal slices in the presence of the phosphodiesterase inhibitor isobutylmethylxanthine did not alter the decreased cAMP response to DA after 2 days of bromocriptine treatment. Results suggest that a decreased number of DA receptor sites may be responsible for the reduced cAMP response to DA in striatal slices after bromocriptine treatment. 32 references. (Author abstract modified)

000297 Rastogi, R. B.; Lapierre, Y. D.; Singhal, R. L. Department of Pharmacology, Faculty of Medicine, University of Ottawa, 275 Nicholas Street, Ottawa, Ontario, Canada **Some neurochemical correlates of "rebound" phenomenon observed during withdrawal after long-term exposure to 1,4-benzodiazepines.** Progress in Neuro-Psychopharmacology. 2(1):43-54, 1978.

The effects of chronic exposure to 1,4-benzodiazepines and subsequent withdrawal on behavioral activity and brain monoamine metabolism were investigated in male Sprague-Dawley rats. Repeated administration of diazepam or bromazepam (10mg/kg) for 22 days suppressed spontaneous locomotor activity, decreased the turnover of norepinephrine (NE) and dopamine (DA), and reduced levels of 4-hydroxy-3-methoxyphenylglycol and homovanillic acid. In contrast, chronic treatment with these anxiolytics enhanced the synthesis and physiological utilization of 5-hydroxytryptamine (5-HT) in several areas of the brain. Forty eight hours after withdrawal from diazepam or bromazepam, behavioral activity, tyrosine hydroxylase activity, and NE and DA release were enhanced while tryptophan hydroxylase activity and levels of tryptophan and 5-HT were reduced. Results indicate that the benzodiazepines exert their tranquilizing action by producing antagonistic effects on catecholamine and 5-HT neuronal systems. 57 references. (Author abstract modified)

000298 Rastogi, Ram B.; Singhal, Radhey L. Nordic Research Laboratories, Connlab Holdings Limited, 265 Hymus Blvd., Pointe Claire, P. Q. H9R 1G6, Canada **The effect of thyroid hormone on serotonergic neurones: depletion of serotonin in discrete brain areas of developing hypothyroid rats.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(1):9-13, 1978.

A single intraperitoneal injection of 131I (200mcCi) in 1-day-old Sprague-Dawley rats induced hypothyroidism and decreased the activity of tryptophan hydroxylase in the midbrain. Levels of 5-hydroxytryptamine (5-HT) were reduced in cerebellum (22%), midbrain (29%), and striatum (31%), while levels of 5-hydroxyindoleacetic acid (5-HIAA) were increased in these regions. Daily administration of L-triiodothyronine (T3, 10mcg/100g) for 25 days, beginning 5 days after radioiodine treatment, increased tryptophan hydroxylase activity, tryptophan levels, and 5-HT levels to values seen in normal rats of the same age group. The concentration of 5-HIAA decreased following T3 treatment. When replacement therapy with T3 was postponed until adulthood, no significant effects on 5-HT metabolism were detected. Results indicate that thyroid hormone deficiency early in life disrupts the normal upsurge of 5-HT metabolism in brain. 26 references. (Author abstract modified)

000299 Rehavi, Moshe; Sokolovsky, Mordechai. Dept. of Biochemistry, George S. Wise Center of Lfe Sciences, Tel-Aviv University, Tel-Aviv, Israel **Multiple binding sites of tricyclic antidepressant drugs to mammalian brain receptors.** Brain Research (Amsterdam). 149(2):525-529, 1978.

To investigate the hypothesis that tricyclic antidepressants are competitive antagonists of the histamine H2 receptor linked to adenylate cyclase in guinea pig brain, the binding of the tricyclic antidepressant (3H)amitriptyline to the muscarinic receptor and to the histamine H2 receptor in mouse brain homogenate was studied. Using propranolol as antagonist, it was found that amitriptyline binds to the beta-adrenergic receptor as well as to the muscarinic and the histamine H2 receptors. In addition, pharmacological doses of alpha-blocker, phentolamine, or dopamine receptor blocker, haloperidol, may also influence amitriptyline binding to mouse brain homogenate. These multiple binding forms of amitriptyline emphasize the problems involved in understanding the biochemical mechanisms by which antidepressants act. 13 references.

000300 Reis, D. J.; Joh, T. H. Laboratory of Neurobiology, Department of Neurology, Cornell University Medical College, New York, NY **Mode of regulation of tyrosine hydroxylase: induction and activation.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1457-1465).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the mode of regulation of tyrosine hydroxylase (TH) in rat brain was discussed. Although TH activity is increased in the locus coeruleus and adrenal by the administration of reserpine and oxotremorine, the mechanisms governing the TH increases differ. Reserpine increases the enzyme protein (induction) in the locus coeruleus and adrenal, and this increase may be due to the increase in the rate of synthesis of the enzyme. In contrast, oxotremorine increases the catalytic activity (activation) of TH in the locus coeruleus, but increases the amount of the enzyme (induction) in adrenal. Possible biochemical and functional evidence for the long-term regulation of TH are presented. 18 references. (Author abstract modified)

000301 Reubi, J. C.; Emson, P. C.; Jessell, T. M.; Iversen, L. L. Brain Research Institute, University of Zurich, Zurich, Switzerland **Effects of GABA, dopamine, and substance P on the release of newly synthesized 3H-5-hydroxytryptamine from rat substantia nigra in vitro.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(3):271-275, 1978.

The effects of gamma-aminobutyric acid (GABA), substance-P, and dopamine (DA) on the release of newly synthesized tritiated 5-hydroxytryptamine (3H-5-HT) were investigated in slices of male Sprague-Dawley rat substantia nigra superfused with L-3H-tryptophan. GABA (50mcM) had no inhibitory effect on the potassium evoked release of 3H-5-HT. Substance P (50mcM) and eledoisin (50mcM) stimulated the spontaneous release of 3H-5-HT. This effect seems to be indirect and is probably mediated by dopaminergic neurons, since the DA antagonist alpha-flupenthixol (1mcM) abolished the substance-P

evoked release of 5-HT. Furthermore, substance-P (10mcM) stimulated 3H-DA release from nigral slices in vitro, and the dopaminergic agonist apomorphine (50mcM) also stimulated 3H-5-HT release. Substance-P may, therefore, activate nigral dopaminergic neurons, which then release DA from their dendrites. The release of DA may in turn stimulate 5-HT release from terminals of the raphe/nigral pathway. 22 references. (Author abstract)

000302 Revuelta, A. V.; Moroni, F.; Cheney, D. L.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Effect of cannabinoids on the turnover rate of acetylcholine in rat hippocampus, striatum and cortex.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(2):107-110, 1978.

The effects of delta9-tetrahydrocannabinol (THC), the major psychoactive compound in marijuana, and cannabidiol (CBD), a nonpsychoactive component, on acetylcholine (ACh) concentration and turnover (TR/ACh) were studied in various regions of male Sprague-Dawley rat brain. Neither THC (0.2-10mg/kg) nor CBD (10 or 20mg/kg) altered ACh concentration in the brain areas examined 30 minutes after the intravenous injection. However, THC caused a marked dose related decrease in TR/ACh in hippocampus, whereas CBD was without effect in this brain region. High doses of THC (5mg/kg) and CBD (20mg/kg) significantly decreased TR/ACh in striatum but had no effect on TR/ACh in parietal cortex. The low doses of THC required to reduce hippocampal TR/ACh suggest that an action on these cholinergic mechanisms plays a role in the psychotomimetic activity of THC. 34 references. (Author abstract)

000303 Richelson, Elliot. Department of Psychiatry and Pharmacology, Mayo Foundation, Rochester, MN 55901 **Tricyclic antidepressants block histamine H1 receptors of mouse neuroblastoma cells.** Nature (London). 274(5667):176-177, 1978.

The interactions of psychotherapeutic drugs with tricyclic antidepressants were studied using muscarinic acetylcholine receptor mediated cyclic GMP formation by mouse neuroblastoma cells. This assay for histamine H1 receptors was used to obtain quantitative data on the interaction of tricyclic antidepressants with these receptors. It is suggested that these drugs are potent inhibitors of histamine H1 receptors and that some compounds are antagonists of histamine H1, histamine H2, muscarinic acetylcholine, alpha-adrenergic receptors and biogenic amine transport systems. 24 references.

000304 Riffee, William H.; Ludden, Thomas M.; Wilcox, Richard E.; Gerald, Michael C. Department of Pharmacology, College of Pharmacy, University of Texas, Austin, TX 78712 **Brain and plasma concentrations of amphetamine isomers in mice.** Journal of Pharmacology and Experimental Therapeutics. 206(3):586-594, 1978.

Brain and plasma concentrations of ()-amphetamine and (-)-amphetamine were determined in male CD-1 mice following administration of 2.5, 5, 10, or 15mg/kg of ()-amphetamine or (-)-amphetamine, each dose containing 12mcCI of the respective 14C-labeled isomer. Thirty minutes after intraperitoneal administration of the three lower doses, the ()-amphetamine/(-)-amphetamine concentration ratios in the brain were significantly greater than one; this ratio was less than one for the 15mg/kg dose. Plasma concentration ratios were significantly greater than one for all doses. The ratios of /- isomers were consistently greater than one in brain and plasma when determined at various times (7.5-120 minutes) after 2.5and 10mg/kg intraperitoneal amphetamine. By contrast, intravenous administration of these doses resulted in no isomeric differences in brain amphetamine, although plasma ()-amphetamine/(-)-amphetamine ratios remained somewhat elevated. After pretreatment with the microsomal enzyme inhibitor, SKF525-A, the intraperitoneal and intravenous routes resulted in similar (/-) isomeric ratios. Results suggest that (-)-amphetamine had a higher apparent volume of distribution than ()-amphetamine and that the (-)-isomer may be extracted more efficiently by the liver, resulting in lower plasma and brain concentrations after intraperitoneal administration. 21 references. (Author abstract modified)

000305 Roberts, F.; Taberner, P. V.; Hill, R. G. Research Institute, Smith Kline & French Laboratories Ltd., Welwyn Garden City, Hertfordshire AL7 1EY, England **The effect of 3-mercaptopropionate, an inhibitor of glutamate decarboxylase, on the levels of GABA and other amino acids, and on presynaptic inhibition in the rat cuneate nucleus.** Neuropharmacology (Oxford). 17(9):715-720, 1978.

Male Porton rats were anesthetized with urethane and treated with the reversible competitive glutamate decarboxylase (GAD) inhibitor 3-mercaptopropionate (3-MP, 150mg/kg ip). Within 15 minutes, GAD activity and gamma-aminobutyric acid (GABA) levels had decreased by about 50% and 30%, respectively, in the region of the caudal medulla containing the dorsal column nuclei (DCN); the decreased GABA levels persisted for at least 45 minutes. In unanesthetized animals, running fits and tonic clonic convulsions occurred within 15 minutes, coincident with the rapid fall in GABA levels. Urethane appeared to protect against this convulsant activity without itself altering GABA levels or the decrease produced by 3-MP. Taurine and glycine levels were unaffected by 3-MP, glutamine levels rose progressively, glutamate levels rose transiently, aspartate and serine levels fell progressively, and alanine levels fell sharply within 5 minutes (subsequently rising to pretreatment level). The level of presynaptic inhibition in the DCN was also decreased by 3-MP, as indicated by the size of the surface recorded P-wave produced by submaximal electrical stimulation of the ipsilateral forepaw. The similarity in time course between the alteration of GABA levels and the decrease in presynaptic inhibition supports the view that GABA is the transmitter mediating synaptic inhibition in the DCN. 30 references. (Author abstract modified)

000306 Robinson, Susan E.; Mobley, Philip L.; Smith, Howard E.; Sulser, Fridolin. Laboratory of Preclinical Pharmacology, National Institute of Mental Health, St. Elizabeth's Hospital, Washington, D. C. 20032 **Structural and steric requirements for beta-phenethylamines as agonists of the noradrenergic cyclic AMP generating system in the rat limbic forebrain.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 303(2):175-180, 1978.

A series of studies undertaken to assess the structural and steric requirements for beta-phenethylamines as agonists of the noradrenergic cyclic AMP generating system in slices of the rat limbic forebrain are described. Significant agonist activity of beta-phenethylamines requires a beta-3,4-dihydroxyphenethylamine with a beta-hydroxyl group in the R-configuration. Thus dopamine did not stimulate the system at concentrations up to 1mlM. Moreover, beta-hydroxyphenethylamines without a 3,4-catechol group (octopamine, phenylephrine, p-hydroxynorephedrine, metaraminol and methoxamine)-- though exerting alpha-agonist activity in peripheral tissues, lack agonist activity in this particular cyclic AMP generating system. The effects of (R) norepinephrine and (R) isoproterenol at maximal concentrations were not additive. The results lend further support to the view that the cylic AMP generating system in slices of the limbic forebrain is part of a norepinephrine receptor coupled adenylate cyclase system with a subpopulation of receptors that are beta in nature. 21 references. (Author abstract)

000307 Robinson, Terry E.; Vanderwolf, C. H. Dept. of Psychology, U. of Michigan, Ann Arbor, MI 48104 **Electrical stimulation of the brain stem in freely-moving rats: II. effects on hippocampal and neocortical electrical activity, and relations to behavior.** Experimental Neurology. 61(3):485-515, 1978.

Hippocampal and neocortical slow wave activity and behavior were recorded in freely moving rats during electrical stimulation (100 pulses/s) of sites throughout the brainstem. Stimulation at many sites produced hippocampal rhythmical slow activity (RSA; theta) and neocortical low voltage fast activity (LVFA) during behavioral immobility, especially after treatment with chlorpromazine. At slightly higher currents, stimulation at most sites elicited behaviors such as walking, circling, or running, and concomitant RSA and LVFA. Atropine sulfate abolished the RSA and LVFA elicited during immobility by stimulation at most sites. The RSA and LVFA which accompanied centrally elicited locomotion was not abolished by atropine. However, exceptions to the rule that RSA and LVFA occurring during immobility are selectively abolished by atropine were provided by sites in the region of the subnucleus compactus and the nucleus of the posterior commissure. Results support the idea that a diffuse ascending system from the brainstem is capable of producing two pharmacologically distinct forms of RSA and LVFA. It is suggested that the monoamines are not critically important for the appearance of RSA or LVFA. 70 references. (Author abstract modified)

000308 Rodriguez, R.; Lujan, M.; Campos, A. E.; Chorne, R. Department of Pharmacology, School of Medicine, National University of Mexico, D.F., Ap. Postal 70-297, Mexico **Morphine dependence in the isolated guinea-pig ileum and its modification by p-chlorophenylalanine.** Life Sciences. 23(9):913-920, 1978.

The effect of the serotonin depletor p-chlorophenylalanine (PCPA) on morphine dependence in the guinea-pig ileum was determined. Ileum segments taken from animals treated with 10 subcutaneous injections of morphine (100mg/kg), given at intervals of 8 hours, responded with intense, prolonged, dose dependent contractions to the in vitro administration of naloxone; ilea from morphinized animals were 8-32 times more sensitive to naloxone than ilea from control animals. PCPA, given before morphine administration, at doses producing only a slight (11%) decrease in intestinal 5-HT levels, partially reduced the sensitivity of the morphine treated ileum to naloxone; high doses of PCPA, which decreased intestinal 5-HT by 40%, enhanced the abstinence like effects of naloxone in the morphinized ileum. However, PCPA had similar effects on naloxone responsiveness in nonmorphinized and morphinized ileum, indicating that PCPA has no effect on the development of physical dependence in the isolated ileum. 32 references. (Author abstract modified)

000309 Roel, L. E.; Moskowitz, M. A.; Rubin, D.; Markovitz, D.; Lytle, L. D.; Munro, H. N.; Wurtman, Richard J. Department of Anatomy, Northwestern University, 303 East Chicago Avenue, Chicago, IL 60611 **In vivo inhibition of rat brain protein synthesis by d-amphetamine.** Journal of Neurochemistry (Oxford). 31(1):341-345, 1978.

Between 1 and 4 hours after administration of 15mg/kg d-amphetamine to male Sprague-Dawley rats, the in vivo incorporation of (14C)lysine into trichloroacetic acid precipitable brain protein was reduced by 28-48%. Incorporation of the 14C label into the protein present in a 100,000g supernatant extract of whole brain was similarly (44%) reduced. Amphetamine administration suppressed protein synthesis in rat cerebral cortex, cerebellum, hypothalamus, striatum, and brainstem to an equivalent extent. The drug did not significantly affect lysine pool sizes measured in these brain regions; thus, the reduced incorporation of labeled lysine was not the result of an isotope dilution effect. It is concluded that the brain polysome disaggregation resulting from amphetamine administration is associated with decreased in vivo synthesis of some brain proteins. 42 references. (Author abstract)

000310 Rohde, B. H.; Rea, M. A.; McBride, W. J. Department of Psychiatry and Biochemistry, Institute of Psychiatric Research, Indiana University School of Medicine, Indianapolis, IN 46202 **The effect of 3-acetylpyridine on the levels of taurine in different regions of the cerebellum of the rat.** Brain Research (Amsterdam). 156(1):202-205, 1978.

The effects of 3-acetylpyridine (3-AP) on the levels of taurine in the molecular layer, granular layer, white matter, and deep nuclei of the cerebellum were examined in adult male Wistar rats. Levels of taurine in whole cerebella were significantly reduced at 21 and 28 days after injection of 3-AP. Taurine levels were 23% lower in the molecular layer, 19% lower in the white matter, and 31% lower in the deep nuclei of the 3-AP treated rats. The level of taurine in the granular layer was not significantly altered by 3-AP. 19 references.

000311 Rosenberg, Howard C.; Okamoto, Michiko. Department of Pharmacology, Cornell University Medical College, 1300 York Ave., New York, NY 10021 **Loss of inhibition in the spinal cord during barbiturate withdrawal.** Journal of Pharmacology and Experimental Therapeutics. 205(3):563-568, 1978.

Three types of inhibition in the spinal cord were studied during barbiturate withdrawal. Cats were made physically dependent on pentobarbital using a standard technique for chronic treatment. All animals treated this way developed severe withdrawal signs, including spontaneous grand mal type convulsions upon abrupt drug withdrawal. Animals were prepared for electrophysiological studies 48 hours after the last dose of chronic pentobarbital treatment, near peak intensity of the withdrawal syndrome. Under halothane anesthesia, the neuraxis was sanctioned at C1 and both common carotid arteries were ligated. The animal was then respired on room air. The lumbar spinal cord was exposed by laminectomy, and a hindleg was dissected to allow stimulation of peripheral nerves and action potentials were recorded from ventral roots L7 and S1 that had been cut near their exits through the dura mater. Recurrent (Renshaw cell mediated) inhibition was almost totally absent during barbiturate withdrawal. Presynaptic inhibition was also decreased. Postsynaptic inhibition was little affected by barbiturate dependence. Findings indicate that loss of function in inhibitory pathways plays a role in barbiturate dependence and withdrawal. 26 references. (Author abstract)

000312 Ruberg, M.; Rotsztejn, W. H.; Arancibia, S.; Besson, J.; Enjalbert, A. Unite de Neuroendocrinologie de l'INSERM, U. 159, Centre Paul Broca, 2ter rue D'alesia, Paris, France **Stimulation of prolactin release by vasoactive intestinal peptide (VIP).** European Journal of Pharmacology (Amsterdam). 51(3):319-320, 1978.

The interactions of vasoactive intestinal peptide (VIP) with adenohypophyseal secretion were studied in vitro in anterior pituitaries from adult male rats. Addition of VIP to the incubation medium induced a highly significant release of prolactin, but had no apparent effect on luteinizing hormone release. These results suggest that VIP, a neuropeptide whose regional distribution is compatible with a neurohumoral function, exerts a significant stimulating action on prolactin secretion. 5 references.

000313 Saavedra, Juan M.; Setler, Paulette E.; Kebabian, John W. Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Biochemical changes accompanying unilateral 6-hydroxydo-**

pamine lesions in the rat substantia nigra. Brain Research (Amsterdam). 151(2):339-352, 1978.

The biochemical consequences of a unilateral 6-hydroxydopamine injection into the substantia nigra of the rat brain were investigated. Projections of dopaminergic neurons from the A8-A9-A10 regions to a number of forebrain areas were confirmed. No innervation to the hypothalamus, including the median eminence, or to the brain were found with the present techniques. No destruction of serotonergic or GABAergic fibers were demonstrated in the lesioned substantia nigra. Increases in glutamic acid decarboxylase activity were restricted to the caudate and zona compacta of the substantia nigra ipsilateal to the lesion, indicating the possibility of a physiological interaction between GABAergic and dopaminergic systems. The neuroanatomical localization of the nigral dopamine sensitive adenylate cyclase was also studied. No change in enzyme activity was found after destruction of a great proportion of the dopaminergic cells, suggesting that this enzyme has an extradopaminergic localization in the substantia nigra. 57 references. (Author abstract)

000314 Sacks, William; Shane, Louis L.; Sacks, Shirley. New York State Rockland Research Institute, Orangeburg, NY 10962 **/Dihydroxyphenylalanine (DOPA) decarboxylase in human and subhuman primate brains./** DOPA decarboxylase in human and subhuman primate brains. Research Communications in Psychology, Psychiatry and Behavior. 3(4):287-312, 1978.

The cerebral uptake and metabolism of carboxyl-14C dihydroxyphenylalanine (DOPA) given intravenously to human subjects and rhesus mokeys, the formation of 14C-dopamine (DA) by brain in vivo when 14C-DOPA was administered by constant infusion into a rhesus monkey, and the estimation of DOPA decarboxylase (DDC) in postmortem brain specimens of human subjects, rhesus monkeys, and baboons were investigated. Following the intravenous injection of DL-(carboxyl-14C) DOPA to human subjects and to rhesus monkeys, decarboxylation by brain in vivo was not detected by an arterio-venous technique. In vitro assays of DDC in postmortem human brains showed significant DDC in only seven of 31 brains. There was no relationship between age of subject or time after death at which the brain was obtained and the presence of significant DDC, but the data suggests that significant enzyme could be found in certain types of death (for example, anoxia, hemorrhaging). In brains with no significant DDC, the untrafiltrate contained inhibitor, but the tissue retentate had no significant DDC. In contrast, in brains having significant DDC, inhibitor was present and repeated untrafiltration led to enhanced DDC activity. The thesis is presented that whenever significant DDC was found, the enzyme probably entered the blood as a result of some physiological insult to organ tissues (that is, lungs) and was carried into the brain on failure of the blood brain barrier. 37 references. (Author abstract modified)

000315 Saller, C. F.; Stricker, E. M. Psychobiology Program, Department of Life Sciences, University of Pittsburgh, Pittsburgh, PA 15260 **Gastrointestinal motility and body weight gain in rats after brain serotonin depletion by 5,7-dihydroxytryptamine.** Neuropharmacology (Oxford). 17(7):499-506, 1978.

Intraventricular injections of 5,7-dihydroxytryptamine, combined with systemic administration of the norepinephrine (NE) uptake blocker desmethylimipramine, produced large depletions of brain serotonin without affecting NE levels in 42 male Sprague-Dawley rats. Twelve animals showed enhancedbody weight gain (25-40% above control values); 7 of these 12 rats were handled extensively during the observation period. The other 30 rats had normal bodyweights, but a marked depression of gastrointestinal motility led to a considerable accumulation of food and wastes in the lower intestines; 26 of these 30 rats were not handled extensively. It is suggested that the intestinal dysfunctions resulted from an exaggerated sympathoadrenal response to stress and that handling tended to ameliorate this effect. In contrast, desmethylimipramine apparently potentiates the decrease in gastrointestinal motility, since its effects did not occur in rats when the drug was withheld or was inexplicably ineffective. 41 references. (Author abstract modified)

000316 Saller, Charles F.; Stricker, Edward M. Stricker: Psychobiology Program, Dept. of Biological Sciences, University of Pittsburgh, Pittsburgh, PA 15260 **Decreased gastrointestinal motility in rats after parenteral injection of p-chlorophenylalanine.** Journal of Pharmacy and Pharmacology (London). 30(10):646-647, 1978.

The effects of the 5-hydroxytryptamine (5-HT) synthesis inhibitor p-chlorophenylalanine (PCPA) on gastrointestinal motility were investigated in male Sprague-Dawley rats. In control animals, almost 75% of the dry material within the intestines disappeared within 2 days of fasting. Two injections of PCPA (120mg/kg ip) reduced whole brain 5-HT by 65% but did not significantly affect wet or dry weights of the gastrointestinal tracts. In contrast, after high doses of PCPA that reduced brain 5-HT by 80-95%, only 25-35% of the dry intragastric material was emptied. A decrease in gastrointestinal motility produced by a large dose of PCPA was also apparent when motility was measured by passage of a nonabsorbable marker. These results do not provide evidence of a direct link between the alterations in gastrointestinal function and central serotonergic function, but do strongly suggest that a decrease in gastrointestinal motility may result from increased sympathoadrenal function. 7 references.

000317 Samorajski, T.; Rolsten, C.; Pratte, K. A. Texas Research Institute of Mental Sciences, 1300 Moursund, Texas Medical Center, Houston, TX 77030 **Dihydroergotoxine (Hydergine) and ethanol-induced aging of C57BL/6J male mice.** Pharmacology (Basel). 16(Suppl. 1):36-44, 1978.

The residual effects of dihydroergotoxine (Hydergine), ethanol, and Hydergine plus ethanol were investigated in old male mice of the C57BL/6J strain. Prolonged 10% v/v ethanol, concomitant with adequate nutrition, produced a significant decrease in life-span, decreased spontaneous locomotor activity, and reduced lipofuscin accumulation in neurons of the reticularis gigantocellularis. These effects were not apparent with Hydergine or alcohol combined with Hydergine. 17 references. (Author abstract).

000318 Sanders, Barbara; Sharpless, Seth K. Department of Psychology, University of Hawaii, 2430 Campus Road, Honolulu, HI 96822 **Dissociation between the anticonvulsant action of alcohol and its depressant action in mice of different genotypes.** Life Sciences. 23(26):2593-2600, 1978.

The effects of ethanol and pentobarbital on flurothyl seizure susceptibility were studied in two lines of mice that were derived by selective breeding with respect to ethanol sleep time. Short sleep mice were more susceptible than long sleep mice to flurothyl induced myoclonus, but there was no line difference in susceptibility to clonus. Low doses of ethanol or pentobarbital increased seizure latencies in both populations, and there was no difference between the lines in the effect of these drugs. The lack of difference in response to ethanol in the two populations indicates that the genetic mechanisms that determine sensitivity to ethanol's anticonvulsant action are not identical with those that determine sensitivity to its depressant action. 8 references. (Author abstract)

000319 Sangdee, Chaichan. University of Utah **Alterations of central monoaminergic transmission by drugs used in affective dis-**

orders. (Ph.D. dissertation). Dissertation Abstracts International. 39(3):1233-B, 1978. Ann Arbor, Univ. M-films No. 7807203. 108 p., 1978.

The possible selective effects of lithium and tricyclic antidepressants on monoaminergic transmission at central norepinephrine (NE) and 5-hydroxytryptamine (5-HT) synapses were investigated in cats. Discharges were evoked in spinal cats by stimulating thoracic spinal reflex pathways or descending excitatory pathways in the cervical spinal cord. Results support the proposal that lithium increases the uptake of 5-HT precursors by central 5-HT terminals and thereby enhances 5-HT synthesis. Since descending exitatory pathways appear to be noradrenergic, they were used as a model to determine the effects of tricyclic antidepressants on central NE transmission. All four compounds (desipramine, imipramine, amitriptyline, and chlorimipramine) enhanced the depressant effects of 5-HTP on spinal sympathetic reflexes, but their relative selectivity of these drugs to block NE and 5-HT reuptake also appears to be relative, rather than absolute. (Journal abstract modified)

000320 Santagostino, A.; Cocchi, D.; Giagnoni, G.; Gori, E.; Muller, E.; Ferri S. Institute of Pharmacology, Faculty of Science and Medicine, University of Milan, Milan, Italy **Some relationships between endorphins and pituitary hormones.** Advances in Biochemical Psychopharmacology. 18:175-181, 1978.

The effects of stress on pituitary opioid factors and the relation between endorphins and pituitary hormones were investigated in female Sprague-Dawley rats. The morphine like activity of pituitary glands from rats exposed to cold stress was approximately four times that of control rats. Stress induced by handling and saline injection also increased the opioid content of rat pituitary gland; this increase was blocked by dexamethasone. Dexamethasone also caused a decrease in the serum corticosterone levels in rats. A linear reverse correlation between the serum corticosterone levels and the opioid activity in pituitary extracts of saline treated rats was demonstrated. These results indicate that there is a close relationship between pituitary axis/adrenal function and the opioid activity of pituitary extracts in rats. In light of studies of adrenocorticotropic hormone (ACTH) secretion in mouse anterior pituitary glands, these findings suggest that the synthesis of endogenous opioids and ACTH may be coupled in pituitary cells. 11 references.

000321 Sastry, Bhagavatula, R. Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada S7N 0W0 **Antagonism of substance P induced facilitation of central neuronal activity by 2,4-dinitrophenol and depressant agents.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(3):527-530, 1978.

The effects of 2,4-dinitrophenol (DNP), pentobarbital, thiopental, methoxyflurane, and halothane on the excitation induced by substance P or acetylcholine in male Sprague-Dawley rat cerebral cortical and interpeduncular nucleus (IPN) cells and in cat dorsal horn neurons were investigated. DNP and the depressant agents more often antagonized the facilitatory effects of substance P than those of acetylcholine on the activity of spinal dorsal horn neurons of unanesthetized decerebrate and spinalized cats or on the IPN and cortical cells of anesthetized or cerveau isole rats. Results indicate that the excitatory effects of substance P on central neurons are extremely sensitive to anesthesia. 18 references. (Author abstract modified)

000322 Sattin, Albert; Stone, Trevor W.; Taylor, David A. Department of Psychiatry, Indiana University School of Medicine, 1100 W. Michigan Street, Indianapolis, IN 46202 **Biochemical and electropharmaceutical studies with tricyclic antidepressants in rat and guinea-pig cerebral cortex.** Life Sciences. 23(26):2621-2626, 1978.

Chopped guinea pig cerebral cortex was incubated with a series of antidepressant drugs that produced increases in the cyclic adenosine monophosphate content of the tissue. These effects were partially or wholly blocked by theophylline, suggesting that they were mediated by endogenous production, release, and action of adenosine. A similar series of drugs was iontophoretically ejected onto male Porton Wistar rat cerebral cortical neurons, where augmentation of concurrently ejected adenosine was observed as slowing of the rate of cell firing. Pharmacological correlations between the two sets of data suggest a common mechanism of action. 11 references. (Author abstract)

000323 Scapagnini, U.; Annunziato, L; Di Renzo, G. F.; Schettini, G.; Preziosi, P. Dept. of Pharmacology, School of Medicine, University of Catania, Andrea Doria 6, Catania, Italy **Effects of clonidine on basal and cold-stimulated TSH secretion.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 230(2):220-224, 1978.

In view of the hypothesis that hypothalamic norepinephrine (NE) plays a stimulatory or permissive role on thyrotropin releasing hormone (TRH) thyroid stimulating hormone (TSH) secretion, the action of clonidine on the hypothalamic hypophyseal thyroidal axis (HHTA) was investigated, specifically the effects of clonidine on basal and cold stimulated TSH secretions were assessed. Clonidine, injected intraperitoneally 20 minutes before cold exposure, is able to counteract the blockade induced by alpha-methyl-p-tyrosine of cold stimulated release of TSH in rats. Under basal conditions the alpha-adrenoceptor stimulating agent, administered into the lateral cerebral ventricle produced, at 30 minutes, a sharp increase in plasma TSH that returns to control levels at 60 minutes. When the drug was given intraperitoneally it caused a significant decrease in plasma TSH 120 minutes after the treatment. Results indicate the action of clonidine on TRH-TSH secretion differs according to the route of administration and the degree of activity of the HHTA. 10 references. (Author abstract modified)

000324 Schanzer, M.; Jacobson, E. D.; Dafny, N. Department of Neurobiology and Anatomy, University of Texas Medical School, Texas Medical Center, Houston, TX 77030 **A neurophysiological approach as a tool to study the effect of drugs on the central nervous system. III. Effect of prostaglandin on seven brain sites.** Experimental Neurology. 60(1):56-67, 1978.

Electrophysiological studies of the effects of 16,16-dimethyl prostaglandin E2 (dmPGE2) on the ventromedial hypothalamus, lateral hypothalamus, medial forebrain bundle, basolateral amygdala, anterior hypothalamus, inferior colliculus, and caudate nucleus were carried out in freely behaving rats. Permanent semimicroelectrodes were stereotaxically implanted in the above sites allowing the averaged sensory evoked responses to be recorded simultaneously both before and after the administration of 30mcg/kg dmPGE2 or its carrier solution, EtOH-NaHC03. All structures, with the exception of the inferior colliculus and caudate nucleus, demonstrated significant changes, both in the overall responsiveness and in the direction of response, in rats treated with dmPGE2 compared to those receiving the EtOH-NaHC03 mixture alone. 13 references. (Author abstract)

000325 Schaul, N.; Gloor, P.; Ball, G.; Gotman, J. College of Physicians and Surgeons, Columbia University, Department of Neurology, 710 West 168th Street, New York, NY 10032 **The electromicrophysiology of delta waves induced by systemic atropine.** Brain Research (Amsterdam). 143(3):475-486, 1978.

Delta waves induced in the EEG by intravenous administration of atropine were investigated in cats. Surface positive delta

waves were related to events associated with excitation of cortical neurons, while surface negative delta waves were related to a decreased probability of unit firing, suggesting the possibility of inhibition. Laminar analysis of atropine induced slow waves indicated that these were probably generated by pyramidal cells in a similar way to delta waves induced by brain lesions. Results suggest that a disturbance in cholinergic input to the cortex may be responsible for delta waves in the EEG. 21 references. (Author abstract modified)

000326 Scholfield, C. N. Department of Psychology, University of Iowa, Iowa City, IA 52242 **Depression of evoked potentials in brain slices by adenosine compounds.** British Journal of Pharmacology (London). 63(2):239-244, 1978.

The effect of adenosine compounds on surface slices of guinea pig olfactory cortex was investigated. With extracellular recordings from the pial surface and stimulation of the presynaptic input the lateral olfactory tract (LOT) generated a monsynaptic negative wave representing dendritic excitatory potentials. This negative wave was depressed by both application of 1cmM adenosine and by adenosine 5'-triphosphate, adenosine 5'-monophosphate, and cyclic adenosine 3',5'-monophosphate (cyclic AMP). Adenine and guanosine were very weak depressants. Theophylline (10mcM-3mM) progressively antagonized the action of adenosine. Dibutyryl cyclic AMP (100mcM) and agents that increase intracellular cyclic AMP were not depressants, suggesting that the action of adenosine was not mediated by cyclic AMP. Intracellular recordings confirmed the depressant effect of adenosine on excitatory potentials generated by LOT stimulation and showed that postsynaptic action potentials and the membrane of the soma were unaffected by adenosine. Results suggest that adenosine reduces excitatory transmission at LOT synapses and fortifies the idea that adenosine has a neurohumoral action. 21 references. (Author abstract modified)

000327 Schulz, Rudiger; Blasig, Julia; Wuster, Michael; Herz, Albert. Abteilung fur Neuropharmakologie, Max-Planck-Institut fur Psychiatrie, Kraepelinstrasse 2, D-8000 Munich 40, Germany **The opiate-like action of tilidine is mediated by metabolites.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(2):89-93, 1978.

The analgesic effect of tilidine in male Sprague-Dawley rats was completely antagonized by the narcotic antagonist naloxone. Radioreceptor assays revealed that the main metabolites of tilidine, nortilidine and bisnortilidine, showed affinity for opiate receptors, while tilidine itself did not. These findings were confirmed in studies using the electrically stimulated guinea-pig ileum and the mouse vas deferens. Chronic tilidine administration to rats caused a considerable degree of physical dependence. In the isolated ileum from chronically morphinized guinea-pigs, both nortilidine and bisnortilidine fully substituted for morphine in preventing induction of withdrawal, indicating dependence liability of these metabolites. 24 references. (Author abstract modified)

000328 Schurr, Avital; Ho, Beng T.; Schoolar, Joseph C. Texas Research Institute of Mental Sciences, 1300 Moursund Avenue, Houston, TX 77030 **The effects of disulfiram on rat liver mitochondrial monoamine oxidase.** Life Sciences. 22(2):1979-1984, 1978.

Monoamine oxidase (MAO) activity in Sprague-Dawley rat liver mitochondria was inhibited by disulfiram. The inhibition was pH and time dependent; 50% inhibition was observed by 16.5microM disulfiram at pH 9.1after 30 minutes or preincubation. At pH 7.4, only slight inhibition was produced, even with a high concentration of disulfiram (33OmicroMO). The inhibition was not reversible and appeared to be of mixed type (non-competitive at low substrate concentrations and uncompetitive at high concentrations). Glutathione at twice the concentration of disulfiram abolished the inhibitory effect of the drug. Ethanol itself had only slight effect on MAO activity, but it enhanced the inhibitory effect of disulfiram at pH 7.4. At pH 9.1, ethanol alone had no effect on MAO but weakened the inhibitory effect of disulfiram. 12 references. (Author abstract modified)

000329 Schurr, Avital; Porath, Ofra; Krup, Margalith; Livne, Avinoam. Department of Biology, Ben-Gurion University of the Negev, Beer-Sheva, Israel **The effects of hashish components and their mode of action on monoamine oxidase from the brain.** Biochemical Pharmacology (Oxford). 27(21):2513-2517, 1978.

The effects of delta1-tetrahydrocannabinol (d1-THC), cannobidiol (CBD), and hashish extract on monoamine oxidase activity (MAO) from porcine brain mitochonrdria were examined, using several amines of biological importance as substrates. MAO activity was inhibited by d1-THC and hashish extract, but not by CBD only slightly by CBD. Phospholipids associated with MAO were essential for the inhibition of the oxidase activity by d1-THC. In enzyme preparations from which the phospholipids were extracted, the sensitivity to d1-THC essentially disappeared. Sensitivity was regained with the addition of phosphatidylcholine. It is suggested that the phospholipids of the MAO complex function as the site of interaction with the cannabinoids, leading to the observed changes in MAO activity. The differential effects of the cannabinoids support the conclusion that MAO plays a central role in mediating the psychomimetic effect of hashish. 22 references. (Author abstract modified)

000330 Schwarcz, Robert; Fuxe, Kjell; Agnati, Luigi F.; Gustafsson, Jan-Ake. Departments of Histology and Chemistry, Karolinska Institutet, S-104-01 Stockholm, Sweden **Effects of bromocriptine on 3H-spiroperidol binding sites in rat striatum. Evidence for actions of dopamine receptors not linked to adenylate cyclase.** Life Sciences (Oxford). 23(5):465-469, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, the effects of kainic acid induced lesions in the neostriatum, of removal of the dorsal cerebral cortex, and of bromocriptine on 3H-spiroperidol binding sites in male Sprague-Dawley rat striatum are reported. The findings suggest that at least two types of dopamine (DA) receptors may exist within the striatum; one appears to be linked to the adenylate cyclase system wile the other is present on axon terminals belonging to corticostriatal fibers. Spiroperidol may have a somewhat higher affinity for the axonic DA receptors than for the DA receptors linked to the adenylate cyclase system. Bromocriptine showed a high affinity for axonic DA receptors and for some DA receptors associated with adenylate cyclase, which are localized on neostriatal neurons. 13 references. (Author abstract modified)

000331 Schwartz, J. C.; Pollard, H.; Llorens, C.; Malfroy, B.; Gros, C.; Pradelles, Ph.; Dray, F. Unite 109 de Neurobiologie, Centre Paul Broca de l'INSERM, 2ter rue d'Alesia, F-75014 Paris, France **Endorphins and endorphin receptors in striatum: relationships with dopaminergic neurons.** Advances in Biochemical Psychopharmacology. 18:245-264, 1978.

The interactions of endorphins and endorphin receptors in striatum with dopaminergic systems were investigated in rats. Tritiated leucine-enkephalin binding sites in the striatum were characterized, striatal levels of endorphins were determined by radioreceptor and radioimmunoassays, and the effects of selective chemical lesions on endorphin and endorphin receptors in striatum were examined. Results suggest that enkephalinergic in-

terneurons terminate presynaptically on dopamine (DA) terminals and exert an inhibitory action on transmitter release from DA terminals in the striatum. The implications of this model for mechanisms underlying opiate dependence, tolerance, and abstinence reactions are discussed in relation to the process of disuse hypersensitivity (enhanced responsiveness of target cells chronically deprived of transmitter stimulation). 63 references.

000332 Schwartz, William J. Laboratory of Cerebral Metabolism, Bldg. 36, 1A-27, 9000 Rockville Pike, Bethesda, MD 20014 **A role for the dopaminergic nigrostriatal bundle in the pathogenesis of altered brain glucose consumption after lateral hypothalamic lesions. Evidence using the 14C-labeled deoxyglucose technique.** Brain Research (Amsterdam). 158(1):129-147, 1978.

Brain glucose consumption was studied in female Sprague-Dawley rats after unilateral electrolytic lesions of the lateral hypothalamic area (LHA) or unilateral 6-hydroxydopamine (6-OHDA) lesions of the substantia nigra (SN), using the 2-deoxy-D-(14C)glucose tracer technique. Unilateral lesions of the LHA resulted in a decrease of the glucose consumption of several structures rostral and ipsilateral to the lesions, compared with that of the corresponding structures on the contralateral side. The depression of glucose consumption was greatest in the sulcal prefrontal cortex, frontal cortex, parietal cortex, and caudatoputamen. No structure caudal to the lesion was affected. The deficit appeared 2 hours postoperatively and persisted for at least 14 days. Unilateral 6-OHDA lesions of the SN resulted in a decrease of glucose consumption in a few of the ipsilateral structures affected after LHA lesions, most significantly the ipsilateral caudatoputamen. The decreased glucose consumption in the ipsilateral caudatoputamen was reversed by apomorphine (1mg/kg, i.v.)administered 14 days postlesion in both electrolytically and 6-OHDA lesioned animals. Results suggest that destruction of the ascending dopaminergic nigrostriatal bundle at the level of the lateral hypothalamus may account for the reduced caudatoputamen glucose consumption seen after LHA lesions. 63 references. (Author abstract modified)

000333 Segal, Mark; Edelstein, Eleazer L. Psychiatry Research Laboratory, Dept. of Psychiatry, Hadassah Medical Organization, Jerusalem, Israel **Lithium and chronic stress-induced hypertension in rats.** Research Communications in Psychology, Psychiatry and Behavior. 3(4):313-324, 1978.

Prolonged administration of two doses of lithium, both producing blood concentrations within the known average limits of human plasma concentrations reached during the prophylactic treatment of manic depression, on chronic, stress-induced, hypertension in rats was evaluated. The fact that the lithium cation has been reported to possess beta-adrenergic blocking activity in both animals and humans and that lithium has been reported to decrease the pressor resonse to exogeneously administered noradrenaline in man were taken into account, and it was speculated that these properties might actually cause lithium to prevent stress-induced hypertension in low dosages. The effect of prolonged lithium administration on blood pressure under stress conditions was measured. The daily oral administration of lithium to rats did not by itself, influence the blood pressure nor interfere, in any way, with the induction of stress hypertension. 10 references. (Author abstract modified)

000334 Seidler, Frederic J.; Whitmore, William L.; Slotkin, Theodore A. Department of Pharmacology, Duke University Medical Center, Durham, NC 17710 **Age-dependence of inhibition of rat brain synaptic vesicle (3H)norepinephrine uptake caused by administration of a single dose of reserpine: persistence of inhibition in adults but not in neonates.** Journal of Pharmacology and Experimental Therapeutics. 206(3):652-660, 1978.

The effects of reserpine on vesicular uptake of tritiated norepinephrine (3H-NE) were investigated in neonatal and adult Sprague-Dawley rats. Uptake of 3H-NE by synaptic storage vesicles prepared from adult rat whole brain was markedly and competitively inhibited by reserpine (1-100nM) in vitro. In contrast, administration of 0.25mg/kg reserpine to adult rats produced a 60% inhibition of vesicular uptake, which was noncompetitive; this inhibition was persistent, and recovery to control levels took more than 3 weeks. Administration of 1 or 5mg/kg reserpine to adult rats resulted in nearly total inhibition of uptake, with correspondingly longer recovery times: 2 weeks after reserpine treatment, vesicular uptake inhibition was 20% at 0.25mg/kg, 48% at 1mg/kg, and 65% at 5mg/kg. One-day-old rats given reserpine showed a more intense initial inhibition of vesicular uptake than did adults, but recovery occurred much sooner. Nineteen-day-old rats showed an intensity and duration of effect midway between those of neonates and adults. Results indicate that bound reserpine affects vesicular uptake in adult rats long after most of the drug has disappeared from the body and that the prolonged period required for restitution of amine levels in the neonate is not dependent on the rate of recovery of the neonatal vesicular uptake system. 40 references. (Author abstract modified)

000335 Sethy, Vimala H. Upjohn Company, CNS Research, Kalamazoo, MI 49001 **Dopaminergic, GABA-ergic and cholinergic interaction in the regulation of striatal acetylcholine concentration.** Research Communications in Chemical Pathology and Pharmacology. 21(2):359-362, 1978.

Muscimol (2-5mg/kg), amino-oxyacetic acid (50mg/kg), and sodium di-n-propylacetate (400mg/kg) significantly increased acetylcholine concentrations in the striatum of male Sprague-Dawley rats. These findings suggest that dopaminergic, gamma-aminobutyric acid (GABA) containing, and cholinergic systems interact to regulate the concentration of acetylcholine in the striatum. It is suggested that GABA containing neurons regulate the activity of striatal cholinergic neurons through their effects on dopaminergic terminals in the striatum. 12 references. (Author abstract modified)

000336 Seybold, Virginia S.; Miller, Jack W.; Lewis, Patricia R. Department of Anatomy, University of Minnesota, 262 Jackson Hall, 321 Church St., Minneapolis, MN 55455 **Investigation of a dopaminergic mechanism for regulating oxytocin release.** Journal of Pharmacology and Experimental Therapeutics. 207(2):605-610, 1978.

The isolated hypothalamo/neurohypophyseal system (HNS) of male Sprague-Dawley rats was incubated with putative neurotransmitters in vitro to determine their significance in regulating oxytocin release. Dopamine inhibited the spontaneous release of oxytocin from the HNS in a dose dependent manner. The inhibitory effects of dopamine were mimicked by atropine and blocked by haloperidol. In in vivo studies, the administration of levodopa plus carbidopa significantly increased the gland content of oxytocin. When a similar dosage regimen was used in pregnant rats beginning on day 16 of gestation, the levodopa/carbidopa combination delayed the average delivery time by 12 hours. Results are consistent with a dopaminergic mechanism for the regulation of oxytocin release. 19 references. (Author abstract modified)

000337 Share, N. N. Department of Pharmacology, Merck Frosst Research Laboratories, P.O. Box 1005, Pointe Claire, Dorval, Quebec H9R 4P8, Canada **Cyclobenzaprine: effect on segmental monosynaptic and tonic vibration reflexes in the cat.** Neuropharmacology (Oxford). 17(9):721-727, 1978.

Cyclobenzaprine reduced segmental evoked monosynaptic potentials to a much greater degree in decerebrate than in spinal cats. Posttetanic potentiated responses were also reduced, but to a lesser degree. Reflex contractions elicited by various frequencies of longitudinal muscle vibration appeared equally sensitive to the action of cyclobenzaprine in decerebrate and decerebrate/decerebellate cats. Results suggest that cyclobenzaprine acts predominantly at the supraspinal level, reducing both gamma-motoneuron and alpha-motoneuron efferent activity. This action does not appear to involve presynaptic mechanisms. It is suggested that cyclobenzaprine exerts its pharmacologic action on reticulospinal rather than on vestibulospinal pathways. 14 references. (Author abstract modified)

000338 Shearer, Donald E.; Fleming, Donovan E. Dustman, Robert E. Neuropsychology Research (151A), Veterans Administration Hospital, Salt Lake City, UT 84148 **Effects of dipropylacetic acid on late components of the photically evoked potential and afterdischarge in rat.** Pharmacology Biochemistry and Behavior. 8(4):501-504, 1978.

The effects of dipropylacetic acid (DPA) on primary, secondary and afterdischarge waves of the photically evoked potential were examined in rats. DPA selectively attenuated late wave components and afterdischarge. A thalamic locus of action for these effects is postulated. 20 references. (Author abstract)

000339 Shein, Kin; Smith, S. E. Department of Pharmacology, Institute of Medicine 2, Mingaladon, Rangoon, Burma **Structure-activity relationships for the anticholinoceptor action of tricyclic antidepressants.** British Journal of Pharmacology (London). 62(4):567-571, 1978.

The anticholinoceptor action of 15 tricyclic antidepressants and derivatives has been studied on the guinea pig ileum. At the muscarinic receptors the compounds were found to exert antagonism which was reversible and apparently competitive up to dose ratios of around 100, but noncompetitive about this level. Log affinity constants were derived from log dose response curves at dose ratios less than 100, where parallel curves were obtained. Amitriptyline, the most potent compound, had 214 fold the potency of the weakest, hydroxyimipramine, but was itself 20 fold weaker than atropine. Structure activity studies indicate that dibenzocycloheptane derivatives are more potent than dibenzazepines and that S or O substitution for C-11 or other major changes in the central ring of the tricyclic nucleus greatly reduces activity. Side chain N-methylation increases potency markedly. This and other findings indicate that both tricyclic nucleus and side chain receptor attachments are largely nonpolar in type. 11 references. (Author abstract)

000340 Sherman, Kathleen A.; Hanin, Israel; Zigmond, Michael J. Department of Psychology, University of Pittsburgh, Pittsburgh, PA 15260 **The effect of neuroleptics on acetylcholine concentration and choline uptake in striatum: implications for regulaton of acetylcholine metabolism.** Journal of Pharmacology and Experimental Therapeutics. 206(3):677-686, 1978.

Symstemic administration of the neuroleptic fluphenazine decreased the acetylcholine (ACh) content in the striatum but not the neocortex of male Sprague-Dawley rats killed by focused microwave irradiation. This effect was observed with doses of fluphenazine as low as 0.05mg/kg haloperidol. Neither fluphenazine nor haloperidol pretreatment had any effect on the high affinity accumulation of choline by striatal synaptosomes, however. Results suggest that the release and metabolism of ACh in the striatum is increased after administration of dopamine receptor antagonists, but that a compensatory increase in choline uptake does not occur (thereby resulting in a temporary decrease in ACh concentration). It is concluded that ACh synthesis is regulated differently in striatum than in other brain regions. 53 references. (Author abstract modified)

000341 Shinozaki, H.; Ishida, Michiko. Tokyo Metropolitan Institute of Medical Sciences 3-18-22, Honkomagome, Bunkyo-ku, Tokyo 113, Japan **Theanine as a glutamate antagonist at a crayfish neuromuscular junction.** Brain Research (Amsterdam). 151(1):215-219, 1978.

Due to the structural similarity of theanine to glutamic acid, the possible action of theanine on crayfish neuromuscular junction was investigated. The opener muscle of the first walking leg of crayfish was used to record intracellular muscle changes. Glutamate was either administered by bath application or injected electrophoretically by applying a negative pulse to a micropipette containing glutamate. Theanine was given by bath application. A dose response curve of iontophoretically applied glutamate was determined, and the effect of theanine on the quisqualate induced depolarization was noted. Results indicate that theanine: 1) blocks both glutamate responses and excitatory junctional potentials without altering the input resistance of the fibers, and 2) combines with the glutamate receptor in a competitive manner. 10 references.

000342 Shiomi, Hirohito; Murakami, Hiroko; Takagi, Hiroshi. Department of Pharmacology, Faculty of Pharmaceutical Sciences, Kyoto University, Kyoto 606, Japan **Morphine analgesia and the bulbospinal serotonergic system: increase in concentration of 5-hydroxyindoleacetic acid in the rat spinal cord with analgesics.** European Journal of Pharmacology (Amsterdam). 52(3/4):335-344, 1978.

Subcutaneous administration of an analgesic dose of morphine increased the concentration of 5-hydroxyindoleacetic acid (5-HIAA) in the spinal cord of male Wistar rats. The time course of the change in 5HIAA concentration in the dorsal, but not ventral, half of the spinal cord corresponded to that of the morphine analgesia. The effect of morphine on 5HIAA concentration disappeared after transection of the spinal cord at C1, but not after transection at the intercollicular level. The possible relationship between morphine analgesia and descending serotonergic neurons in the spinal cord is discussed. 37 references. (Author abstract modified)

000343 Sieghart, Werner; Forn, Javier; Schwarcz, Robert; Coyle, Joseph T.; Greengard, Paul. Department of Pharmacology, Yale University School of Medicine, New Haven, CT 06510 **Neuronal localization of specific brain phosphoproteins.** Brain Research (Amsterdam). 156(2):345-350, 1978.

In a study of the phosphorylation of membrane proteins, kainic acid was infused into the left striatum of Sprague-Dawley rats. The synaptic membrane fraction from striata injected with kainic acid showed reduced amounts of several proteins and enriched amounts of others, compared to contralateral striata. The synaptic membrane fraction isolated 10 days after injection of kainic acid showed a decrease in the cyclic adenosine monophosphate (AMP) dependent incorporation of labeled phosphorus 32P into proteins Ia, Ib, and II. Kainic acid treatment also decreased 32P incorporation into several proteins who phosphorylation was independent of cyclic AMP. Kainic acid caused a 76% reduction in the amount of protein I in the injected striata, as compared to control striata; a similar reduction was observed in the activities of the three marker enzymes, glutamic acid decarboxylase, choline acetyltransferase, and dopamine sensitive adenylate cyclase. These results indicate that proteins Ia, Ib, and II are all located in neurons and suggest that protein I is a specific neuronal protein. 26 references.

000344 Simpson, Lance L. Department of Pharmacology, College of Physicians and Surgeons, 630 W. 168th St., New York,

NY 10032 **Mechanism of the adverse interaction between monoamine oxidase inhibitors and amphetamine.** Journal of Pharmacology and Experimental Therapeutics. 205(2):392-399, 1978.

Blood pressure and heart rate responses to d-amphetamine were measured in control male Wistar rats and in rats pretreated with the monoamine oxidase inhibitors phenelzine (mixed A and B inhibitor), clorgyline (type A inhibitor), or deprenyl (type B inhibitor). Phenlzine and clorgyline both markedly potentiated blood pressure responses and slightly potentiated heart rate responses to d-amphetamine, while deprenyl was without effect. Under conditions that led to potentiation of d-amphetamine, clorgyline increased the levels of norepinephrine (NE) in mesenteric artery and in heart, without altering blood levels or half life of d-amphetamine. In related experiments, iprindole, an inhibitor of hepatic aromatic hydroxylation, increased blood levels and prolonged the half life of d-amphetamine. Under conditions that led to changes in metabolism of d-amphetamine, iprindole did not alter levels of NE in mesenteric artery or heart and did not potentiate d-amphetamine induced cardiovascular responses. Results suggest that monoamine oxidase inhibitors interact with d-amphetamine by increasing the store of releasable NE in postganglionic sympathetic neurons rather than by inhibiting d-amphetamine metabolism. 22 references. (Author abstract modified)

000345 Singh, A. K.; Banister, E. W. Dept. of Kinesiology, Simon Fraser University, Burnaby, British Columbia, Canada V5A 1S6 **Effects of 6-hydroxydopamine on brain and blood catecholamines, ammonia, and amino acids in rats.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(2):331-333, 1978.

The effect of 6-hydroxydopamine (6-OHDA) upon brain and blood catecholamines, ammonia (NH3), and amino acids was studied in rats subjected to increasing doses of the drug. Time dependent effects after injection were also studied. Systemically injected 6-OHDA significantly, acutely reduced brain adrenaline, noradrenaline (NA), total catecholamines (TC), gamma-aminobutyric acid, and glutamic acid (Glu); concomitantly, brain NH3 increased. In blood, NA and TC were reduced and adrenaline and NH3 increased. It is noted that the changes in brain monoamines are remarkable, since it has been reported that 6-OHDA does not cross the blood-brain barrier. It is proposed that these changes result from a general stress response, or a reflex peripheral sympathetic response, to falling blood pressure which, in some manner, communicates to the central nervous system. As the dose of 6-OHDA increased, brain NH3 increased and Glu decreased. A similar effect was seen from a single dose, as the time after injection for sampling brain and blood constituents increased. Blood NH3 increased without change in Glu, glutamine, or asparagine. The source of NH3 may be from deamination of adenine nucleotide or catechols released from nerve terminals under the abnormal stimulus of 6-OHDA. 8 references. (Author abstract)

000346 Singh, A. K.; Banister, E. W. Dept. of Kinesiology, Simon Fraser University, Burnaby, British Columbia, Canada V5A 1S6 **Effects of 6-hydroxydopamine on brain and blood catecholamines, ammonia, and amino acid metabolism in rats subjected to high pressure oxygen induced convulsions.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(2):334-336, 1978.

Effects of 6-hydroxydopamine (6-OHDA) on rat brain and blood adrenaline, noradrenaline (NA), ammonia (NH3), gama-aminobutyric acid (GABA), and amino acid metabolsim prior to and after high pressure oxygen (OHP) induced convulsions, were studied. The 6-OHDA reduced GABA and glutamate (Glu) prior to OHP exposure in rat brain so that the concentration was even equal to that seen in nondrugged animals after convulsion. Concomitantly, 6-OHDA reduced the latency of OHP-induced convulsions significantly, and increased brain NH3, glutamine, and asparagine significantly. Although 6-OHDA, in increasing dosage, elevated blood adrenaline concentration, convulsion produced a significant further increase in adrenaline. Blood NA was not significantly changed in drugged, convulsed animals, and was much less than blood NA concentrations in nondrugged convulsed animals. Increasing doses of 6-OHDA also increased NH3 in the blood significantly, and convulsion increased its concentration further. It is suggested that latency of convulsion seems to be related to certain monoamine levels, since in some drugged animals where adrenaline and total catecholamines were still reduced 96 hours after the first of two doses of 6-OHDA, NA concentrations were recovered to relatively normal levels and the convulsion latency time was also increased, although, it remained significantly abbreviated from undrugged animals' convulsion time. It is also suggested that low brain GABA levels seem to be a prime effector of convulsive activity. 11 references. (Author abstract)

000347 Sjoden, Per-Olow; Lindqvist, Mats. Neurophysiological Laboratory, Ulleraker Hospital, Uppsala University, S-75017, Uppsala, Sweden **Behavioral effects of neonatal thyroid hormones and differential postweaning rearing in rats.** Developmental Psychobiology. 11(4):371-383, 1978.

The possibility that a postweaning manipulation of the rearing environment might alter the behavioral effects of neonatal thyroid hormone tri-iodothyronine (T3) plus thyroxine (T4) stimulation in rats was investigated. Male and female rats given an injection of 75mcg T3 and 25mcg T4 on the third day after birth were raised under enriched and impoverished postweaning conditions. Observations of their open field behavior on day 63 and day 112 revealed a higher rate of activity in the experimental groups as compared to controls; also observed were faster running times and more entries per minute in Hebb-Williams maze testing on days 74 to 86, indicating behavioral hyperactivity in the experimental rats. Active avoidance testing at age 91 days revealed a higher number of intertrial crossings and significantly faster unconditioned response and conditioned response latencies in the experimental rats as compared to the control groups. Enriched postweaning rearing altered the behavioral effects in experimental rats comparatively little, least in the open field and more so for escape latencies and avoidance latencies and for the number of errors in the Hebb-Williams maze. 30 references. (Author abstract modified)

000348 Slater, Paul; Blundell, Carole. Department of Physiology, Medical School, The University, Manchester M13 9PT, England **The effect of 6-hydroxydopamine on the antinociceptive action of morphine.** European Journal of Pharmacology (Amsterdam). 48(3):237-247, 1978.

In a study of the role of brain catecholamines in the antinociceptive action of morphine, it is reported that intraventricular 6-hydroxydopamine which depleted brain noradrenaline in the rat had no effect on morphine's antinociceptive action but combined treatment with pargyline and 6-hydroxydopamine to further deplete brain dopamine potentiated morphine's action. It was also shown that when dopamine receptors were blocked, the antinociceptive action of morphine was potentiated whereas alpha-adrenoceptor and beta-adrenoceptor antagonists had no effect. 6-Hydroxydopamine had two effects in mice tested on the hot plate. It produced a hyperalgesia and antagonized the antinociceptive action of morphine. This antagonism of morphine appeared to be the result of the depletion of noradrenaline rather than dopamine. Intraventricular injection of both catecholamines restored the antinociceptive action of morphine in 6-hydroxydopamine-treated mice but dopamine was ineffective in the presence of a dopamine beta-hydroxylase inhibitor. It is suggested that the antinociceptive action of morphine is expressed by noradrenergic neurons in the mouse and by both noradrener-

gic and dopaminergic neurons in the rat. 32 references. (Author abstract modified)

000349 Slotkin, T. A.; Salvaggio, M.; Lau, C.; Kirksey, D. F. Department of Pharmacology, Duke University Medical Center, Durham, NC 27710 **3H-dopamine uptake by synaptic storage vesicles of rat whole brain and brain regions.** Life Sciences (Oxford). 22(10):823-830, 1978.

Tritiated dopamine uptake was evaluated in a cride preparation of synaptic storage vesicles from male Sprague-Dawley rat brain. Uptake was highly dependent on temperature, had an absolute requirement for adenosine triphosphate and magnesium ions, and was totally inhibited by reserpine. The uptake displayed saturation kinetics, with a Michaelis-Menten constant value of 0.26mcM at 20 degrees. 3H-dopamine uptake was inhibited competitively by norepinephrine, with an inhibitory constant value of 0.69mcM. Vesicles derived from a primarily dopaminergic region (corpus striatum) exhibited the same ratio of uptakes of 3H-dopamine/3H-norepinephrine as did those from a primarily noradrenergic region (cerebral cortex). Results indicate that dopaminergic and noradrenergic storage vesicles exhibit identical uptake properties. 19 references. (Author abstract modified)

000350 Smith, James E.; Co, C.; Lane, J. D. Department of Psychiatry, Louisiana State University Medical Center, P. O. Box 33932, Shreveport, LA 71130 **Turnover rates of serotonin, norepinephrine and dopamine concurrently measured in seven rat brain regions.** Progress in Neuro-Psychopharmacology. 2(3):359-367, 1978.

Turnover rates for serotonin (5-HT), norepinephrine (NE), and dopamine (DA) were measured in seven brain regions after intravenous injections of 3H-L-tryptophan (0.5mCi) and 3H-L-tyrosine (0.5mCi) through chronic jugular catheters in male Wistar rats. Sixty and ninety minutes after injection of the radiolabeled precursors, the rats were sacrificed by near freezing in liquid nitrogen, and the brains were dissected into telencephalon (TEL), cerebral cortex, diencephalon (DIEN), mesencephalon (MESEN), striatum (STR), hippocampus, and pons-medulla oblongata (P-M). NE, DA, and 5-HT were extracted and assayed fluorometrically for tissue content and then separated with alumina columns and thin layer chromatography. The radioactivity in each fraction was measured and values for specific radioactivity and rates of turnover were calculated. 5-HT turnover rates were highest in the MESEN (2.8n/g/hour) and lowest in the DIEN (0.6n/g/hour). NE turnover was highest in the P-M (2.5n/g/hour) and lowest in the TEL (0.3n/g/hour). The turnover rates for DA were highest in the STR (24.3nM/g/hr) and lowest in the P-M (0.4n/g/hour). These turnover rates were consistent with the proposed role for these putative neurotransmitters in brain function. 29 references. (Author abstract modified)

000351 Sokolove, P. G.; Roth, S. H. Department of Biological Science, University of Maryland Baltimore County, Catonsville, MD 21228 **Effect of harmaline on the crayfish stretch receptor: blockade at a GABA-mediated inhibitory synapse.** Neuropharmacology (Oxford). 17(9):729-735, 1978.

Harmaline blocked inhibitory postsynaptic potentials mediated by gamma-aminobutyric acid (GABA) in the slow muscle stretch receptor organ sensory neuron of the crayfish. Postsynaptic effects of harmaline included an increase in membrane resistance, hyperpolarization of the membrane potential, and depression of the antidromic stretch receptor spike. However, harmaline failed to abolish the postsynaptic conductance increase produced by exogenously administered GABA. Results suggest that synaptic blockade is due primarily to the action of harmaline on the presynaptic axon. 21 references. (Author abstract modified)

000352 Soyka, Lester F.; Joffe, Justin M.; Peterson, John M.; Smith, Sue M. Department of Pharmacology, College of Medicine, University of Vermont, Burlington, VT 05401 **Chronic methadone administration to male rats: tolerance to adverse effects on sires and their progeny.** Pharmacology Biochemistry and Behavior. 9(4):405-409, 1978.

Methadone was administered chronically to male CD rats prior to mating. In contrast to previous findings in pups of males treated acutely with methadone, no adverse effects were found in offspring sired after 21-32 days methadone administration. In the sire, the maintenance of normal weights of accessory sex glands after 4 months of daily methadone suggests that tolerance developed to the central effects responsible for the depressed serum luteinizing hormone and testosterone levels found after acute administration of methadone. Tolerance did not develop to the inhibition of weight gain produced by methadone administration. No evidence for a dominant lethal effect could be found after chronic methadone administration, in contrast to evidence for this effect in previous experiments with acute administration of methadone. 10 references. (Author abstract modified)

000353 Sparber, S. B. Department of Pharmacology, 105 Millard Hall, University of Minnesota, Minneapolis, MN 55455 **Is prenatal induction of tyrosine hydroxylase associated with postnatal behavioral changes?** In: Vernadakis, A., Maturation of neurotransmission. Basel, S. Karger, 1978. (p. 200-209).

A paper presented at the Sixth Meeting of the International Society of Neurochemistry, Saint-Vincent, Minnesota, 1977, is provided. To verify that manipulation of biogenic amines could be affected during embryogenesis, drugs were injected into fertilized chicken eggs at various stages of development. Depletion of catecholamines during embryogenesis resulted in significant increases in tyrosine hydroxylase activity long after hatching. Reserpine injection early in development also caused a significant increase in catecholamines at the same time enzyme activity was elevated. However, d,l-alpha-methyl-p-tryosine failed to increase steady state levels of catecholamines postnatally. Behavioral analysis postnatally showed opposite effects of treatment with the two agents, even though enzyme activity was elevated in both groups. Comparisons with actions of methylmercury in this species and reserpine given prenatally to rats are made. Implications of this study for human development are also mentioned. 30 references. (Author abstract modified)

000354 Stein, Barry E.; Dixon, James P. Department of Physiology, Medical College of Virginia, Richmond, VA 23298 **Superior colliculus cells respond to noxious stimuli.** Brain Research (Amsterdam). 158(1):65-73, 1978.

Neuronal recordings were made in all laminae of the golden hamster superior colliculus. Specialized cells that were preferentially or only activated by noxious stimuli were encountered in the intermediate and deeper layers. Responses to noxious stimuli were blocked by the analgesic drug etorphine and reinstated by the narcotic antagonist naloxone. These drugs had no obvious effects on responses to innocuous stimuli. Results provide direct physiological evidence for the involvement of superior colliculus cells in pain. 35 references. (Author abstract modified)

000355 Suddith, R. L.; Hutchison, H. T.; Haber, B. Marine Biomedical Institute, University of Texas Medical Branch, Galveston, TX 77550 **Uptake of biogenic amines by glial cells in culture I. A neuronal-like transport system for serotonin.** Life Sciences. 22(24):2179-2188, 1978.

The kinetic and pharmacological parameters of 5-hydroxytryptamine (5-HT) accumulation in rat C6 astrocytoma cells were determined. The cells took up 5-HT via a high affinity carrier mediated system (Michaelis-Menten constant value, 1mcM) and a second component of lower affinity. The high affinity 5-HT transport system was rapid, concentrative, and highly sodium and temperature dependent. hlorimipramine and Lilly-110140 preferentially blocked the glial uptake of 5-HT but not of norepinephrine (NE). NE, and to a lesser extent dopamine, blocked glial 5-HT uptake, suggesting a possible overlap betweeen the catecholamine and indoleamine glial carrier systems. High affinity 5-HT transport in glia was inhibited by 5-hydroxydopamine but not by 6-hydroxydopamine. A variety of ring hydroxylated indoleamine analogs blocked glial 5-HT transport; 5,7-dihydroxytryptamine was the least effective inhibitor tested. Phenylethylamine and its O-methylated derivatives blocked synaptosomal and glial 5-HT transport equally well. Results indicate that the cultured C6 cell glial model possesses a 5-HT transport system that kinetically and pharmacologically resembles a neuronal 5-HT tansport system. 41 references. (Author abstract modified)

000356 Sulpizio, Anthony; Fowler, Philip J.; Macko, Edward. Department of Biological Research, Smith Kline and French Laboratories, Philadelphia, PA 19101 **Antagonism of fenfluramine-induced hyperthermia: a measure of central serotonin inhibition.** Life Sciences. 22(16):1439-1446, 1978.

A variety of pharmacological agents, including standard neuroleptic drugs, were tested for their effects on fenfluramine-induced hyperthermia. Fenfluramine produced a rapid hyperthermic effect in rats housed in a warm environment. Drugs with known activity on serotonin-mediated pathways were the most effective antagonists of this hyperthermia. Among several antipsychotic agents, clozapine was unique by virtue of its potent and specific antagonism of fenfluramine-induced hyperthermia. It is suggedted that this serotonin-blocking activity of clozapine may help to account for the lack of extrapyramidal symptoms following administration of the drug to man. 24 references. (Author abstract modified)

000357 Sulser, F. Dept. of Pharmacology, Vanderbilt University School of Medicine, Nashville, TN 37203 **Functional aspects of the norepinephrine receptor coupled adenylate cyclase system in the limbic forebrain and its modification by drugs which precipitate or alleviate depression: molecular approaches to an understanding of affective disorders.** Pharmakopsychiatrie/Neuro-Psychopharmakologie (Stuttgart). 11(1):43-52, 1978.

The literature on functional modification of the limbic norepinephrine receptor coupled adenylate cyclase system of animals by drugs which can precipitate or alleviate depression and by electroconvulsive treatment is reviewed. The noradrenergic cyclic adenosine 3',5'-monophosphate (AMP) generating system in slices of the limbic forebrain is characterized as a functional postsynaptic norepinephrine receptor system. Evidence for a central postsynaptic regulatory mechanism involving the noradrenergic receptor coupled adenylate cyclase system is provided. This particular system in the limbic forebrain displays properties of an adrenergic receptor with partial beta characteristics. Drugs which either can precipitate or alleviate depression in man cause time dependent opposite changes in the reactivity of this receptor system. It is speculated that depression prone patients may have catecholamine receptors in limbic and possibly other brain structures with heightened responsiveness and that successful treatment requires desensitization of enhanced noradrenergic receptor function thus causing a reduction in the postulated amplificational mechanism that translates sensory input eventually into physiological and behavioral events. 46 references. (Author abstract modified)

000358 Swift, Robert M.; Hoffmann, Philip C.; Heller, Alfred. Department of Pharmacological and Physiological Sciences, University of Chicago, Chicago, IL 60637 **Activity-dependent changes in substantia nigra gamma-aminobutyric acid.** Brain Research (Amsterdam). 156(1):181-186, 1978.

The functional relationship between activity along the gamma-aminobutyric acid (GABA) containing striatonigral fibers and the utilization of GABA in the substantia nigra (SN) was investigated in male Sprague-Dawley rats. The decline in GABA content in the SN was determined following inhibition of GABA synthesis with 3-mercaptopropionic acid (3-MP). Impulse flow was then either blocked by electrolytic lesions of the striatonigral fibers passing through the medial forebrain bundle and medial edge of the internal capsule or increased by stimulation of these fibers. Stimulation of this pathway resulted in an enhanced loss of GABA in the SN following inhibition of GABA synthesis, and the rate at which GABA synthesis declined in the SN following synthesis inhibition was correlated with activity in the striatonigral GABA containing projection. The occurrence of unique depletions in nigral GABA content due to 3-MP and the dependency of this decrease on impulse activity in the striatonigral fibers suggests that the depleted GABA exists in a separate pool; these effects may be related to changes in the amount of GABA released in the SN. 20 references.

000359 Taberner, Peter V.; Roberts, Fiona. Department of Pharmacology, University of Bristol Medical School, University Walk, Bristol BS8 1TD, England **The anticonvulsant action of L-2,4-diaminobutyric acid.** European Journal of Pharmacology (Amsterdam). 52(3/4):281-286, 1978.

The gamma-aminobutyric acid (GABA) uptake inhibitor, L-2,4-diaminobutyric acid (L-DABA), was tested for anticonvulsant activity in female LACG mice. When administered intracerebroventricularly (icv, 2mcmoles) 15 minutes prior to intraperitoneal administration of picrotoxin or 3-mercaptopropionate (3-MP), L-DABA almost doubled the median convulsive dose values for the two convulsants. The anticonvulsant effect was not observed when L-DABA was administered 40 minutes prior to the convulsants. Intraperitoneally (ip) administered L-DABA (5nmoles/kg) also antagonized the convulsant effect of 3-MP. L-DABA, given ip or icv, had no anticonvulsant action against strychinine. The D-isomer of DABA, which is less active as an inhibitor of GABA uptake, had no anticonvulsant activity against 3-MP. Three other inhibitors of GABA uptake (nipecotic acid, beta-alanine, and cis-1,3-aminocyclohexane carboxylic acid) also failed to antagonize the convulsant effects of 3-MP. Possible mechanisms of the anticonvulsant action of L-DABA are discussed. 29 references. (Author abstract modified)

000360 Tache, Yvette; Letarte, Jacques; Collu, Robert. Division of Endocrinology and Metabolism, Pediatric Research Center, Hopital Sainte-Justine, Montreal, Quebec, Canada **Effects of clofibrate on plasma tryptophan, growth hormone, and prolactin and on brain tryptophan and serotonin in prepubertal rats.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(2):269-273, 1978.

The effects of clofibrate administration (200mg/kg, po) on somatic growth, plasma levels of lipids, tryptophan, growth hormone (GH), and prolactin (PRL), as well as on brain concentrations of tryptophan and 5-hydroxytryptamine (5-HT), were studied in prepubertal rats. The drug did not significantly alter ponderal growth, but an appreciable reduction of tail length was observed in rats treated for 30 days. Triglyceride concentrations in plasma showed a 43% diminution after 30 days of treatment, whereas, free fatty acid levels were not modified. Clofibrate administration for 7, 15, or 30 days caused a fall in total trypto-

phan and a significant increase of the free fraction in plasma, with no change in brain tryptophan levels. Brain 5-HT was generally unaffected, but a marked elevation of this parameter was noted in rats treated for 15 days. Plasma GH and PRL concentrations remained unaltered. It is concluded that the slight reduction of somatic growth, the diminution of triglycerides, and the increase of free tryptophan in plasma, induced by chronic clofibrate treatment, are not associated with variations in brain tryptophan and 5-HT levels, or with modifications of plasma GH and PRL titers. 33 references. (Author abstract)

000361 Tachikawa, S.; Takenaka, T.; Maeno, H. Department of Pharmacology and Biochemistry, Central Research Laboratories, Yamanouchi Pharmaceutical Co., Ltd., Itabashi-ku, Tokyo, Japan **Effects of indenolol (YB-2), a new beta-adrenergic blocking agent, and its dextro isomer on the central nervous system of mice and rabbits.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 234(1):74-87, 1978.

Central depressant actions of a beta-adrenergic blocking agent, indenolol, and its dextro isomer were studies in male ICR mice and male albino rabbits. D-Idenolol was less active than dl-indenolol in lowering methamphetamine toxicity and calming fighting behavior, but the muscle relaxant, hypolocomotive, and anticonvulsant effects of d-indenolol were virtually equal to those of the racemate. The dose response relationship between beta-blocking and central effects suggests that the taming and antimethamphetamine toxicity effects of subcutaneous dl-indenolol do not directly relate to peripheral beta-blocking or membrane stabilizing activity. Intravenous and intracerebroventricular administration of dl-indenolol resulted in suppression of pressor responses to the electrical stimulation of the brainstem in unanesthetized rabbits; either d-indenolol nor dl-practolol was effective against the pressor responses. A possible central beta-adrenergic blocking effect of dl-indenolol is discussed. 33 references. (Author abstract modified)

000362 Takagi, Masaharu; Yamamoto, Chosaburo. Department of Physiology, University of Kanazawa Medical School, Kanazawa, 920 Japan **Suppressing action of cholinergic agents on synaptic transmissions in the corpus striatum of rats.** Experimental Neurology. 62(2):433-443, 1978.

The effects of acetycholine (ACh) and carbamylcholine (CCh) on synaptic transmission in the corpus striatum were studied in vitro in thin striatal sections and in vivo in rats anesthetized with alpha-chloralose. CCh and ACh suppressed field potentials (N2-wave) and single cell discharges elicited in slices by electrical stimulation and caused weak and inconsistent changes in firing evoked by glutamate (Glu). When the cholinergic agents were administered in concentrations more than 10 times that needed to suppress the N2-wave, background firing was initiated or modified in pattern by CCh. Atropine and tubocurarine had no effect on the N2-wave, but atropine blocked the suppressing action of ACh and CCh on the N2-wave. CCh suppressed negative field potentials elicited in vivo by local stimulation of the striatum. CCh also suppressed single cell discharges evoked by local electrical stimulation, but it had no effect on firing induced by Glu. Similarly, CCh suppressed firing elicited by motor cortex stimulation, but did not block activation of striatal neurons by nigral stimulation. Results suggest that the cholinergic agents block synaptic transmission in the striatum without causing excitation or inhibition in postsynaptic neurons. 19 references. (Author abstract modified)

000363 Takahara, Jiro; Kageyama, Jingo; Yunoki, Sho; Yakushiji, Wataru; Yamauchi, Jiro; Kageyama, Nobuko; Ofuji, Tadashi. Third Department of Internal Medicine, Okayama University School of Medicine, Okayama, Japan **Effects of 2-bromo-alpha-ergocryptine on beta-endorphin-induced growth hormone, prolactin and luteinizing hormone release in urethane anesthetized rats.** Life Sciences. 22(24):2205-2208, 1978.

Adult male Sprague-Dawley rats were injected intraperitoneally with saline or 2-bromo-alpha-ergocryptine (CB-154, 10ng/0.5ml) 30 minutes prior to intraventricular injection of saline or beta-endorphin (1mcg/10mcl or 5mcg/10mcl). Animals were sacrificed by decapitation 30 minutes after the second injection. Intraventricular injection of beta-endorphin elicited significant, dose related increases in serum growth hormone (GH), prolactin, and luteinizing hormone (LH) levels. Pretreatment with CB-154 inhibited the release of GH, prolactin, and LH induced by beta-endorphin. Results indicate that the stimulatory effects of beta-endorphin on GH, prolactin, and LH may involve an inhibition of dopaminergic mechanisms in the CNS. 10 references. (Author abstract modified)

000364 Thornhill, J. A.; Hirst, M.; Gowdey, C. W. Department of Pharmacology, Health Sciences Center, University of Western Ontario, London, Ontario, Canada N6A 5C1 **Changes in the hyperthermic responses of rats to daily injections of morphine and the antagonism of the acute response by naloxone.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(3):483-489, 1978.

Core temperatures of unrestrained male Sprague-Dawley rats were measured by rectal probe over a 4 hour period following seven daily subcutaneous injections of morphine sulfate (5, 20, or 80mg/kg). With the smaller doses, rapid hyperthermia occurred and was maximal after 20mg/kg; with 80mg/kg, two of eight rats had immediate hypothermia, but the group response was a small, delayed hyperthermia. Peak hyperthermia increased and occurred progressively sooner after each injection. In rats given naloxone (1, 10 or 40mg/kg) 15 minutes before each morphine dose, naloxone significantly reduced the hyperthermia induced by 5 and 20mg/kg morphine. Results indicate that morphine induced temperature changes and perhaps stress induced changes can be suppressed by naloxone. 25 references. (Author abstract modified)

000365 Ticku, M. K.; Van Ness, P. C.; Haycock, J. W.; Levy, W. B.; Olsen, R. W. Dept. of Biochemistry, University of California, Riverside, CA 92521 **Dihydropicrotoxinin binding sites in rat brain: comparison to GABA receptors.** Brain Research (Amsterdam). 150(3):642-647, 1978.

To determine the site of picrotoxinin (a potent convulsant drug) action, a radioactive biologically active analogue of picrotoxinin, (3H)alpha-dihydropicrotoxinin, was synthesized, and dihydropicrotoxinin and gamma-aminobutyric acid (GABA) receptor binding sites in neonatal rat brain were compared. The binding of dihydropicrotoxinin appears to be related to the pharmacological action of the drug, because binding was inhibited by biologically active analogues of picrotoxinin and other convulsants, but not by biologically inactive compounds. Picrotoxinin binding was not inhibited by GABA; yet, dihydropicrotoxinin binding was found in similar quantities and subcellar locations (synaptosomes and light microsomes) to GABA receptor (sodium independent) binding sites. Results suggest that the GABA receptor system is composed of at least two linked functions, a recognition site and a chloride ion channel. Since picrotoxinin binding does not occur at the GABA recognition site and is distinctly different from GABA binding, it is suggested that picrotoxinin inhibits the GABA synaptic response by direct or allosteric modulation of the chloride ion channel which is coupled to GABA receptors, or by affecting the coupling mechanism. 24 references.

000366 Titeler, Milt; Seeman, Philip; Henn, Fritz. Department of Pharmacology, University of Toronto, Toronto, Ontario,

Canada M5S 1A8 **Differential centrifugation of 3H-apomorphine and 3H-spiroperidol binding sites.** European Journal of Pharmacology (Amsterdam). 51(4):459-460, 1978.

The effects of various centrifugal procedures on the level of 3H-apomorphine binding and 3H-spiroperidol binding in calf caudate membrane preparations were investigated. The differential distribution of the two radioactive drug binding sites indicated that they are distinct molecular entities and not two different conformations of the same receptor. Since the 3H-apomorphine binding site has been shown to be identical to the 3H-dopamine site and the 3H-spiroperidol site identical to the 3H-haloperidol site, these findings cast doubt on the hypothesis that 3H-dopamine binding site represents the agonist conformation of the postsynaptic dopamine receptor, while the 3H-haloperidol binding site represents the antagonist conformation of the same receptor. 5 references.

000367 Toll, Lawrence Robert. University of California, Los Angeles **The mechanism of uptake and storage of catecholamines in rat brain synaptic vesicles. (Ph.D. dissertation).** Dissertation Abstracts International. 39(1):218-B, 1978. Ann Arbor, Univ. Microfilms No. 7811388, 160 p., 1978.

The uptake and storage of a variety of catecholamines in rat brain synaptic vesicles were studied and the bioenergetics of the storage of (3H) norepinephrine (NE) were determined. The in vitro uptake of labeled NE into synaptic vesicles was stimulated about 10-fold by the presence of adenosine 5'-triphosphate (ATP) and Mg2. Both uptake of NE into synaptic vesicles and the fraction associated adenosine triphosphatase (ATPase) activity were inhibited by N. N'-dicyclo-hexylcarbodiimide (DCCD), tributyltin, and 4-chloro-7-nitrobenzofurazan, inhibitor of mitrochondrial ATPases. Results of the studies indicate that a Mg2/ ATPase situated on the exterior of the synaptic vesicle membrane is responsible for generating a transmembrane pH gradient. This pH gradient, and a membrane potential, appears to be driving force for catecholamine uptake and storage in synaptic vesicles. Furthermore, reserpine likely acts as a membrane transporter to inhibit NE transport in either direction. (Journal abstract modified)

000368 Trzcinka, G. P.; Lipton, J. M.; Hawkins, M.; Clark, W. G. Department of Physiology, University of Texas Health Science Center, Dallas, TX 75235 **Differential effects on temperature of chlorpromazine injected into PO/AH and medulla oblongata of the rat.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 232(1):111-116, 1978.

Hyperthermic responses developed after injections of chlorpromazine into the preoptic/anterior hypothalamic (PO/AH) region of unrestrained male rats. Sites near the posterior border of the anterior hypothalamus were the most sensitive. Injections of chlorpromazine into the medulla oblongata did not alter rectal temperature in intact rats, but caused hypothermic responses when the PO/AH region was destroyed. These results provide evidence for a secondary temperature control in the medulla which ordinarily responds minimally to drugs and may be suppressed by an intact primary control in the PO/AH region. 16 references. (Author abstract)

000369 Tseng, Liang-Fu. Department of Pharmacology, Medical College of Wisconsin, Milwaukee, WI 53233 **Effects of para-methoxyamphetamine and 2,5-dimethoxyamphetamine on serotonergic mechanisms.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(2):101-105, 1978.

The serotonergic effects of racemic methoxyamphetamine (PMA) and racemic 2,5-dimethoxyamphetamine (2,5-DMA) were compared in male Sprague-Dawley rats. PMA (0.1-3.2mg/kg iv) and 2,5-DMA (2-16mg/kg iv) increased the myoclonic twitch activity (MTA) of suprahyoideal muscle, which is mediated by central serotonergic and dopaminergic mechanisms. The increased MTA caused by PMA or 2,5-DMA was blocked by the 5-hydroxytryptamine (5-HT) receptor blocker, methysergide. The increased MTA induced by PMA but not by 2,5-DMA was reduced by the 5-HT synthesis inhibitor chlorophenylalanine and by the 5-HT uptake inhibitor chlorimipramine. In ventricular perfusion experiments, PMA (1.6mg/kg) effectively increased the release of radioactivity from brain preloaded with tritiated 5-HT, whereas 2,5-DMA (16mg/kg) decreased the release of radioactivity. Analysis of the perfusate by thin layer chromatography for tritiated 5-HT and 5-hydroxyindoleacetic acid ((3H)5-HIAA) revealed an increased release of unchanged (3H)5-HT in the perfusate after injection of PMA. The ratio of (3H)5-HT to (3H)5-HIAA was markedly increased after PMA but was not altered by 2,5-DMA. It is concluded that PMA elicits its pharmacological action indirectly by releasing 5-HT, while 2,5-DMA acts directly on 5-HT receptors. 32 references. (Author abstract modified)

000370 Tyce, Gertrude M.; Owen, Charles A., Jr. Mayo Clinic, 200 First Street, SW, Rochester, MN 55901 **Cerebral metabolism of glucose in adrenalectomized rats: effects of treatment with L-DOPA and a monoamine oxidase inhibitor.** Brain Research (Amsterdam). 158(2):466-469, 1978.

The effects of L-dopa and the monoamine oxidase inhibitor (MAOI) beta-phenylisoprophylhydrazine on cerebral metabolism of glucose were investigated in adrenalectomized male Sprague-Dawley rats. One minute after injection of (14C)glucose, the specific activity of glucose in plasma was highest in untreated adrenalectomized rats and lowest in controls. The specific activity of glucose in plasma decreased more rapidly in treated and untreated adrenalectomized rats than in controls, suggesting that utilization of glucose was more rapid in adrenalectomized rats. The mean concentrations of glutamine and aspartate were less in the brains of adrenalectomized rats than in controls. Treatment of adrenalectomized rats with L-dopa and the MAOI increased the concentrations of alanine, glutamine, and gamma-aminobutyric acid and decreased aspartate concentration. The concentrations of glutamate, glycine, threonine, and taurine were not significantly affected by adrenalectomy or drug treatment. 5 references.

000371 Tzeng, S. F.; Ho, I. K. Department of Pharmacology and Toxicology, University of Mississippi Medical Center, 2500 North State Street, Jackson, MS 39216 **Acute and continuous morphine administration on the gamma-aminobutyric acid system in the mouse.** Progress in Neuro-Psychopharmacology. 2(1):55-64, 1978.

The effects of acute and continuous morphine administration on levels of gamma-aminobutyric acid (GABA) and glutamate and on activities of L-glutamate-1-decarboxylase (GAD) and GABA-alpha-ketoglutarate aminotransferase (GABA-T) in whole and discrete areas of male ICR mouse brain were investigated. Acute morphine administration significantly increased brain GABA content, decreased glutamate level, and had no effect on brain GAD and GABA-T activity. Continuous morphine administration caused no significant change in brain glutamate level, but significantly decreased GABA level and GAD activity. The rate of brain GABA and accumulation induced by aminooxyacetic acid was slower in tolerant mice than in nontolerant animals. Both acute and continuous morphine administration caused distinct effects on the GABA system in cerebral cortex, brainstem, hypothalamus, and the remaining areas of the brain except cerebellum. Results indicate that central GABA mechanisms are involved in morphine analgesia, tolerance, and physical dependence. 23 references. (Author abstract modified)

000372 U'Prichard, David C.; Charness, Michael E.; Robertson, David; Snyder, Solomon H. Department of Pharmacology and Experimental Therapeutics, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Prazosin: differential affinities for two populations of alpha-noradrenergic receptor binding sites.** European Journal of Pharmacology (Amsterdam). 50(1):87-89, 1978.

The antihypertensive agent prazosin showed differential affinities for apparent presynaptic (a1) and postsynaptic (a2) alpha-noradrenergic receptor binding sites in rat brain, kidney, heart, and vas deferens. Phentolamine was equipotent at a1 and a2 receptors in rat cortex, while pehnoxybenzamine was about eight times more potent at the a1 site than at the a2 site. Prazosin was 5-13 times more potent than phentolamine or phenoxybenzamine at a1 receptors in the four tissues examined, but was much weaker than phentolamine and phenoxybenzamine at a2 receptors. Prazocin was 10,000 times more potent at a1 than a2 receptors in cortex and 1,000 times more potent in kidney. Prazosin inhibited 3H-WB-4101 and 3H-clonidine binding in a monophasic fashion, but inhibited 3H-dihydroergokryptine binding with a shallow, biphasic slope, indicating competition for two sites. Results suggest that prozosin in low concentration blocks postsynaptic but not presynaptic alpha-receptors. 5 references.

000373 Uchida, Shuji; Takeyasu, Kunio; Noguchi, Yutaka; Yoshida, Hiroshi; Hata, Taeko; Kita, Tomitaro. Department of Pharmacology I, Osaka University School of Medicine, Kitaku, Osaka 530, Japan **Decrease in muscarinic acetylcholine receptors in the small intestine of mice subjected to repeated cold stress.** Life Sciences. 22(24):2197-2204, 1978.

The maximal contraction of the small intestine by acetylcholine greatly decreased during repeated cold stress in mice. This change was primarily due to a decrease in muscarinic receptors in the small intestine, measured by 3-quinuclidinyl benzilate binding. Injection of norepinephrine or the tricyclic antidepressant carpipramine during exposure to cold stress prevented this decrease in muscarinic receptors. The physiological significance of this phenomenon is discussed in relation to vagal hyperactivity under stress. 14 references. (Author abstract)

000374 Uhl, George R.; Goodman, Robert R.; Kihar, Michael J.; Snyder, Solomon H. Department of Pharmacology Experimental Therapeutics, Johns Hopkins University School of Medicine, Baltimore, MD 21205 **Enkephalin and neurotensin: immunohistochemical localization and identification of an amygdalofugal pathway.** Advances in Biochemical Psychopharmacology. 18:71-87, 1978.

The distribution of leucine-enkephalin, methionine-enkephalin, and neurotensin was investigated in Sprague-Dawley rat brain, using specific antisera to the peptides, the colchicine pretreatment technique, and lesion studies. Striking disproportions between high cell body density and relatively low fiber/terminal like fluorescence were found in the periaqueductal gray, whereas extensive networks of fibers and terminals with no detectable enkephalin positive cell bodies were found in the vicinity of the nucleus accumbens. Lesion studies revealed an enkephalin and neurotensin containing pathway that appears to arise from cell bodies in the central amygdala and course through the ventrolateral stria terminalis. This peptide containing system is the first enkephalin or neurotensin containing pathway to be demonstrated in the brain and indicates that all enkephalin is not contained in interneurons. 32 references.

000375 Vadas, E. B.; Hosein, E. A. Dept. of Biochemistry, McGill University, Montreal, P. Q., Canada H3G 1Y6 **Alteration of the erythrocyte ultrastructure and blood viscosity by morphine.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(2):245-251, 1978.

The effects of acute morphine administration on intact erythrocytes, and on their flow properties, were studied by measuring the mean cell volume, cell geometry, and whole blood and plasma viscosities of rabbit blood. Morphine caused a small (2% to 7%) increase in mean cell volume. Changes in cell geometry were found to be time dependent and most pronounced in concave portions of the red cells. Whole blood viscosity was found to decrease upon morphine treatment; this may be due in part to a concurrent decrease in plasma viscosity. 20 references. (Author abstract modified)

000376 Valchar, M.; Metys, J.; Metysova, J.; Diabac, A. Research Institute for Pharmacy and Biochemistry, 130 60 Prague 3, Czechoslovakia **Interaction of dosulepin with perphenazine. Their effects on brain monoamines in rats.** Activitas Nervosa Superior (Praha). 20(1):54-55, 1978.

In a paper read at the 19th Annual Psychopharmacological Meeting, held in Jesenik, Czechoslovakia during January 1977, the effects of the interaction of dosulepin with perphenazine on brain monoamines in rats are described. Dosulepin alone did not change noradrenaline (NA), dopamine (DA), or homovanillic acid (HVA) levels, whereas dosulepin in combination with perphenazine completely blocked the elevation of HVA induced by perphenazine. Dosulepin in increasing doses combined with perphenazine failed to evoke more pronounced changes in the levels of NA and DA. The appropriateness of dosulepin therapy in the treatment of neuroleptic-induced extrapyramidal syndromes is discussed. 6 references.

000377 Van der Zee, P.; Hespe, W. Gist-Brocades NV, Research & Development, P.O. Box 523, Haarlem, The Netherland **A comparison of the inhibitory effects of aromatic substituted benzhydryl ethers on the uptake of catecholamines and serotonin into synaptosomal preparations of the rat brain.** Neuropharmacology (Oxford). 17(7):483-490, 1978.

Aromatic substituted benzyhydryl ethers were tested for inhibitory activity of monoamine uptake by synaptosomal preparations from rat corpus striatum (dopamine and serotonin) and hypothalamus (noradrenaline and serotonin) and were classified in three groups. Potent inhibitors of one or both uptake processes in striatal synaptosomes but relatively weak inhibitors of the uptake processes in hypothalamic synaptosomes included benzhydryl ethers with a tropine side chain, like benztropine and halogen substituted derivatives. Compounds that exerted a strong effect on one or both hypothalamic uptake processes but were relatively weak inhibitors of striatal uptake included antidepressants of the imipramine type, mianserin, and the benzhydryl ether tofenacine. Compounds that caused marked inhibition of all four uptake processes were classified as broad spectrum compounds; aromatic halogen substitution in benzhydryl ethers with an aminoethyl side chain leads to such compounds. It is suggested that broad spectrum compounds such as flunamine may be therapeutically useful in the treatment of depression and Parkinson's disease. 44 references. (Author abstract modified)

000378 Van Loon, Glen R.; De Souza, Errol B. Department of Medicine, University of Toronto, Toronto, Ontario M5S 1A8, Canada **Effects of beta-endorphin on brain serotonin metabolism.** Life Sciences. 23(9):971-978, 1978.

Intracisternally administered human beta-endorphin (BE, 15microg) increased concentrations of 5-hydroxytryptamine (5-HT) and its metabolite, 5-hydroxyindoleacetic acid (5-HIAA), in brainstem and hypothalamus and decreased 5-HIAA concentration in hippocampus in male Sprague-Dawley rats. These data are compatible with the hypothesis that BE increases 5-HT

turnover in brainstem and hypothalamus and decreases 5-HT turnover in hippocampus. BE increased in brainstem and hypothalamus and decreased in hippocampus the rate of pargyline induced decline of 5-HIAA. BE decreased the rate of pargyline induced accumulation of 5-HT in all three brain areas. The probenecid induced accumulation of 5-HIAA in brainstem was decreased by BE, indicating that BE increases release of 5-HT from neurons in brainstem and hypothalamus and decreases release of 5-HT from hippocampal neurons. It is suggested that BE either decreases 5-HT reuptake in these three brain regions or increases 5-HIAA egress from brain. 26 references. (Author abstract modified)

000379 Van Loon, Glen R.; De Souza, Errol B. Department of Medicine, MSB Room 6265, University of Toronto, Toronto, Ontario, Canada, M5S 1A8 **Development of tolerance to the ACTH-releasing effects of beta-endorphin.** Research Communications in Chemical Pathology and Pharmacology. 22(1):203-204, 1978.

Acute intracisternal injection of human beta-endorphin resulted in increased plasma concentrations of adrenocorticotropic hormone (ACTH) in male Sprague-Dawley rats. Repeated injections of beta-endorphin were associated with the development of tolerance to the ACTH stimulating effect. Naloxone had no effect on plasma ACTH in rats treated chronically with beta-endorphin. These findings provide evidence for the development of tolerance to the pituitary hormone stimulating effects of beta-endorphin. It is suggested that the acute and chronic effects of beta-endorphin on secretion of ACTH and other pituitary hormones may involve mediation by brain monoamines. 11 references. (Author abstract modified)

000380 Van Loon, Glen R.; Kim Chul. University of Toronto, Department of Medicine, Clinical Science Division, Toronto, Ontario M5S 1A8, Canada **Beta-endorphin-induced increase in striatal dopamine turnover.** Life Sciences. 23(9):961-970, 1978.

Intracisternally administered human beta-endorphin (BE, 15microg) increased striatal concentrations of the dopamine (DA) metabolites, 3,4-dihydroxyphenylacetic acid (DOPAC) and homovanillic acid (HVA), and produce catalepsy in male Sprague-Dawley rats. These effects were inhibited by naloxone. Pargyline induced increases in striatal DOPAC and HVA were greater in BE treated animals than in saline treated animals. BE also increased the rate of decline in striatal DA concentration following synthesis inhibition with alpha-methyltyrosine. BE and probenecid interacted competitively, decreasing each other's ability to increase striatal HVA. Naloxone prevented the BE induced decrease in HVA response to probenecid. It is suggested that BE acts presynaptically to decrease DA release in striatum, while increases in striatal DOPAC and HVE represent a compensatory attempt to increase DA synthesis. Although BE appears to increase turnover of DA to its metabolites, DA release may be suppressed by BE. 37 references. (Author abstract modified)

000381 Van Ree, Jan M.; Witter, Albert; Leysen, Josee E. Rudolf Magnus Institute for Pharmacology, Medical Faculty, University of Utrecht, Vondellaan 6, Utrecht, The Netherlands **Interaction of des-tyrosine-gamma-endorphin (DTgammaE, beta-LPH62-77 with neuroleptic binding sites in various areas of rat brain.** European Journal of Pharmacology (Amsterdam). 52(3/4):411-413, 1978.

The interaction of des-tyrosine-gamma-endorphin (DTgammaE,beta-LPH62-77) and related peptides with the in vitro binding of neuroleptics and other centrally acting drugs to their respective binding sites in rat brain was investigated. None of the endorphin or adrenocorticotrophic hormone (ACTH) fragments displaced 3H-haloperidol or 3H-spiperone binding from their stereospecific binding sites in membrane preparations of rat striatum or frontal cortex, respectively. The endorphin fragments did not inhibit the binding of tritiated lysergic acid diethylamide or diazepam. Fentanyl binding was inhibited by the opioid peptide alpha-endorphin in a dose dependent manner; fentanyl binding was inhibited less effectively by ACTH4-10 and by the opioid fragment beta-LPH78-91 and was not inhibited by the other endorphin fragments tested. No interaction of DTgammaE,beta-LPH62-77 with 3H-muscimol (labeling gamma-aminobutyric acid agonist sites) and 3H-dexetimide (labeling muscarinic sites) was observed. Results indicate that none of the endorphin and ACTH fragments tested showed high affinity binding to the neuroleptic binding sites in rat brain. These findings are discussed in relation to the reported antipsychotic effects of DTgammaE,beta-LPH62-77. 5 references.

000382 Varmuza, Susannah L.; Wong, Yu-Wah; Mishra, Ram K. Neuropharmacology Laboratory, Department of Psychiatry, McMaster University Medical Centre, Hamilton, Ontario, Canada **3H-haloperidol binding: some theoretical aspects.** Life Sciences (Oxford). 23(5):471-473, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, theoretical aspects of 3H-haloperidol binding are discussed. Evidence is provided to indicate that nonspecific binding may in some cases be overlooked due to the nonsaturating nature of this type of binding. Some of the theoretical aspects of competition for receptor binding sites are examined. 12 references. (Author abstract modified)

000383 Versteeg, Dirk H. G.; Tanaka, Masatoshi; De Kloet, E. Ronald; Van Ree, Jan M.; De Wied, David. Rudolf Magnus Institute for Pharmacology, Medical Faculty, University of Utrecht, Vondellaan 6, Utrecht, The Netherlands **Prolyl-leucyl-glycinamide (PLG): regional effects on alpha-MPT-induced catecholamine disappearance in rat brain.** Brain Research (Amsterdam). 143(3):561-566, 1978.

The effects of prolyl-leucyl-glycinamide (PLG), administered intracerebroventricularly to male Wistar rats, on the alpha-methyl-p-tyrosine induced disappearance of catecholamines from brain nuclei were investigated. PLG significantly accelerated the disappearance of dopamine from the caudate nucleus, but had no significant effect in other forebrain nuclei. The effects of PLG on noradrenaline disappearance in the supraoptic nucleus (39%) and the posterior thalamic nucleus (-26%) came close to significance. In the hindbrain, noradrenaline disappearance was decreased in the nucleus ruber and the A9 region and enhanced in the A8 region and the nucleus commissuralis of PLG treated rats. No significant changes in dopamine disappearance were observed in hindbrain sites. The effects of PLG are discussed in relation to previous findings with arginine vasopressin under similar experimental conditions, and the patterns of the two peptides, effects on brain catecholamine metabolism are correlated with their effects on learning and memory processes. 33 references.

000384 Vigh, Sandor; Setalo, Gyorgy; Schally, Andrew V.; Arimura, Akira; Flerko, Bela. Department of Anatomy, University Medical School, 7643 Pecs, Hungary **LH-RH-containing nerve fibers in the brain of rats treated with sulpiride or reserpine.** Brain Research (Amsterdam). 152(2):401-405, 1978.

Morphological differences between rat and rabbit ovulatin are discussed, and the extent of the luteinizing hormone-releasing hormone (LH-RH) system in rats treated with sulpiride, a drug known to block ovulatin, or with reserpine, was studied. The LH-RH containing axon system of rats treated with sulpiride or

reserpine seems to be filled with the neurohormone to a greater extent than is that system in the normal rat. Findings indicate that the extent of the LH-RH containing neuron system of the rat is similar to that of the rabbit, but the similarity can be recognized only in those rats in which the axoplasmic transport or release of LH-RH has been blocked. Additional factors which may account for the relatively small number of LH-RH containing nerve cells in immunohistologically stained sectins of the rat brain are discussed. 13 references.

000385 Vigouret, J. M.; Burki, H. R.; Jaton, A. L.; Zuger, P. E.; Loew, D. M. Biological and Medical Research Department, Sandoz Ltd., CH-4002 Basel, Switzerland **Neurochemical and neuropharmacological investigations with four ergot derivatives: bromocriptine, dihydroergotoxine, CF25-397 and CM 29-712.** Pharmacology (Basel). 16(Suppl. 1):156-173, 1978.

Neurochemical and neuropharmacological investigations conducted with four ergot derivatives on rats revealed different pharmacodynamic effects of these compounds. Bromocriptine and CM 29-712 displayed actions typical of postsynaptic dopamine receptor stimulants, in particular in the extrapyramidal system. CM 29-712 proved to be more potent than bromocriptine, with an early onset of action. CF 25-397 and dihydroergotoxine, while not showing all actions typical of central dopamine agonists, appeared to exert some of their effects by means of a stimulation of central serotoninergic sites. In the rat sleep/wakefulness cycle and in reserpine-induced ponto-geniculo-occipital waves in the cat, they mimicked the effects of 5-hydroxytryptophan. In the latter test CF 25-397 proved to be particularly potent. In addition, bromocriptine, dihydroergotoxine, and CM 29-712 showed neurochemical effects consistent with central alpha-adrenergic blockade or an enhanced impulse flow in central noradrenergic neurons. 56 references. (Author abstract)

000386 Wahlstrom, Goran. Department of Pharmacology, University of Umea, S-901 87 Umea, Sweden **Increased penetration of barbital through the bloodbrain barrier in the rat after pretreatment with probenecid.** Acta Pharmacologica et Toxicologica (Kobenhavn). 43(4):260-265, 1978.

The effects of probenecid (100mg/kg subcutaneously) pretreatment on the penetration of barbital and hexobarbital through the bloodbrain barrier was investigated in male Sprague-Dawley rats. Probenecid pretreatment decreased the latency to loss of righting reflex after 150mg/kg iv or 200mg/kg ip barbital and significantly increased the time during which the righting reflex was lost after iv barbital. Probenecid had no effect on the latency of anesthesia induced by hexobarbital (0.25mg/kg/second iv), but did increase the ensuing anesthesia times. Pretreatment with probenecid also increased the concentration of barbital in the brain after ip administration. The possibility that a weak organic acid transport system out of the brain is partly responsible for the latency observed in barbital induced anesthesia is discussed. 25 references. (Author abstract modified)

000387 Wahlstrom, Goran. Department of Pharmacology, University of Umea, S-901 87 Umea, Sweden **Estimation of brain sensitivity to the convulsive effects of choline and changes induced by chronic barbital treatments in the rat.** European Journal of Pharmacology (Amsterdam). 51(3):219-227, 1978.

In a study of the cholinergic mechanisms involved in the barbiturate abstinence syndrome, a threshold method for testing sensitivity to the convulsive effect of choline was developed. Choline was infused at a constant rate in the tail vein of male Sprague-Dawley rats pretreated with 2mg/kg methylatropine, and the dose needed to induce a clear cut convulsion was determined. The optimal rate of choline infusion was about 30mg/kg/minute. The threshold could be increased by pretreatment with 8mg/kg intraperitoneal atropine. On the third day of abstinence after long-term barbital treatment (32-33 weeks), no change in choline threshold was found, but other signs of abstinence, such as spontaneous convulsions, reached a maximum. Later in the abstinence period (days 10-12), there was an increase in sensitivity to choline, which could be reduced by a single dose of atropine given on day 3 of abstinence. Sensitivity to the convulsive effect of pilocarpine was increased on day 3 of abstinence, and pilocarpine induced convulsions reduced the tolerance to hexobarbital in rats pretreated with barbital. The time difference between the action of choline and pilocarpine during abstinence indicates that there may be more than one cholinergic mechanism involved in the barbiturate abstinence syndrome. 26 references. (Author abstract modified)

000388 Wang, R. Y.; Aghajanian, G. K. Department of Psychiatry, Yale University School of Medicine, New Haven, CT 06510 **Collateral inhibition of serotonergic neurones in the rat dorsal raphe nucleus: pharmacological evidence.** Neuropharmacology (Oxford). 17(10):819-825, 1978.

The possibility that 5-hydroxytryptamine (5-HT) axon collaterals form a powerful self-regulating system for 5-HT cells was investigated in male albino rats by pharmacologically manipulating the 5-HT system. In rats pretreated with para-chlorophenylalanine (P-CPA), reserpine, or both, the inhibitory responses of antidromically identified 5-HT neurons to stimulation of the ventromedial tegmentum (VMT) were either totally prevented or markedly reduced in the great majority of cells. The P-CPA effects were reversed by the injection of 5-hydroxytryptophan, the immediate precursor of 5-HT, but not by L-dihydroxyphenylalanine, a catecholamine precursor. Prolonged periods of suppression of firing of 5-HT cells occurred following VMT stimulation in some cells in treated animals. In these cells, continuous stimulation of the VMT diminished the VMT induced effect. Of possible 5-HT antagonists tested, only metergoline was effective in antagonizing the VMT induced depressant effect on 5-HT neurons, and the development of the effect was extremely delayed. Results show that VMT induced depression of firing of 5-HT neurons depends on the availability of 5-HT. This finding is consistent with the view that the inhibitory responses of 5-HT neurons to VMT stimulation are mediated directly through 5-HT axon collaterals (or dendodendritic junctions). 50 references. (Author abstract modified)

000389 Wang, Yu Kuei; Radouco-Thomas, Simone; Seguin, M. K.; Papp, N.; Lee, K. P.; Shimoyama, Y. Departement de Pharmacologie, Faculte de Medecine, Universite Laval, Quebec, G1K 7P4, Quebec, Canada **Calcium-reserpine interactions studied by electron spin resonance spectroscopy in spin labeled artificial membranes.** Progress in Neuro-Psychopharmacology. 2(1):87-92, 1978.

The interactions of reserpine with calcium on labeled phospholipid membranes were studied by electron spin resonance spectroscopy. Using 2,2,6,6-tetramethylpiperidine-1-oxyl as spin label, it was shown that reserpine has a fluidizing effect on the lecithin/cholesterol system which corresponds to a membrane expansion and could represent the molecular basis of the tissue calcium losses reported after in vivo reserpine administration. The reserpine induced membrane expansion was partially reversed by the addition of calcium and was prevented by pretreatment with calcium. These findings may provide a molecular basis for previously reported in vivo calcium/reserpine interactions. 32 references. (Author abstract modified)

000390 Wecker, Lynn; Dettbarn, Wolf-D; Schmidt, Dennis E. Department of Pharmacology, Vanderbilt University School of Medicine, Nashville, TN 37232 **Choline administration: modifica-**

tion of the central actions of atropine. Science. 199(4324):86-87, 1978.

The effects of atropine on acetylcholine concentration and on sodium dependent high affinity choline uptake in rat brain hippocampus and cortex were studied and compared in naive and choline-treated animals. The anticholinergic atropine decreases acetylcholine concentrations and increases high affinity choline uptake in cortical and hippocampal regions of rat brains. Administration of choline 1 hour before atropine prevents both of the atropine-induced alterations. It is suggested that alterations in acetylcholine precursor availability may modify the effects of centrally active anticholinergic agents. 21 references. (Author abstract)

000391 Weight, Forrest F.; Smith, Peter A.; Schulman, Jesse A. Laboratory of Preclinical Studies, NIAAA, Rockville, MD 20852 **Postsynaptic potential generation appears independent of synaptic elevation of cyclic nucleotides in sympathetic neurons.** Brain Research (Amsterdam). 158(1):197-202, 1978.

Cyclic adenosine 3',5'-monophosphate (AMP), cyclic guanosine 3',5'-monophosphate (GMP) and several of their derivatives had little or no effect on membrane potential and membrane permeability of most neurons in the sympathetic ganglion of the bullfrog. Although synaptic stimulation is known to elevate both cyclic GMP and cyclic AMP in this tissue, cyclic nucleotide administration did not mimic the membrane potential and permeability changes associated with the generation of slow postsynaptic potentials (PSPs). Results suggest that the generation of PSPs may be independent of the synaptic elevation of cyclic nucleotides. It appears that activation of one type of postsynaptic receptor may have two separate functional consequences, slow PSP generation and cyclic nucleotide elevation. 32 references.

000392 Weisinger, R. S.; Denton, D. A.; McKinley, M. J.; Nelson, J. F. Howard Florey Institute of Experimental Physiology and Medicine, University of Melbourne, Parkville, Victoria, 3052, Australia **ACTH induced sodium appetite in the rat.** Pharmacology Biochemistry and Behavior. 8(4):339-342, 1978.

The effect of adrenocorticotropic hormone (ACTH) on the sodium appetite of rats was studied. Subcutaneous injections of long-acting synthetic ACTH (5U/day) caused a large increase in the intakes of both 0.5M NaCl and water in rats. By the fifth day of treatment the rats were turning over an amount of sodium approximating their own total body sodium. The mineral appetite was specific for NaCl. Intakes of KCl, MgCl2 and CaCl2 were unchanged. ACTH was ineffective in adrenalectomized rats suggesting that the appetite was dependent on adrenal hormones. 24 references. (Author abstract modified)

000393 Weissman, B. A. Department of Pharmacology, Israel Institute for Biological Research, P. O. Box 19, Ness-Ziona, Israel **Diethylstilbestrol potentiation of the dopamine-elicited formation of adenosine 3',5'-monophosphate in incubated male rat hypothalamus.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 302(3):307-311, 1978.

The mechanism involved in the DES stimulated formation of cAMP was studied in Charles River rats. Results indicate that dopamine (DA) stimulates the cAMP generating system in the male rat hypothalamus only to a very low extent (25% above control). Diethylstilbestrol (DES), a synthetic estrogen, was found to be extremely potent (a 4-fold and 16-fold stimulation at 20 mcM and 100 mcM, respectively). Addition of either one to an incubation medium containing varying concentrations of the other resulted in a synergistic response. The potentiation by 20 mcM DES of the effect elicited by 100 mcM DA was the most remarkable, namely, a 3 fold stimulation of the combined response. A 4 fold and 7.5fold stimulation of cAMP accumulation was observed when adenosine (100 mcM) or adenosine (100 mcM) DA (100 mcM) were present in the incubation medium. Theophylline (0.5mM), an adenosine antagonist, could effectively reduce this effect, as did adenosine deaminase (10 mcg/ml). Clomiphene (50 mcM), an estrogen antagonist, exhibited a marked decrease in DES DA elicited cAMP formation. Pimozide (40 mcM) had the ability to significantly block the stimulatory effects of DES and DA. 21 references. (Author abstract)

000394 Widerlov, E.; Lewander, T. Psychiatric Research Center, University of Uppsala, Ulleraker Hospital, S-750 17 Uppsala, Sweden **Inhibition of the in vivo biosynthesis and changes of catecholamine levels in rat brain after alpha-methyl-p-tyrosine: time- and dose-response relationships.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(2):111-123, 1978.

Dose response and time response relationships between tissue alpha-methyltyrosine concentrations, in vivo inhibition of brain catecholamine synthesis, and depletion of brain catecholamines were investigated in male Sprague-Dawley rats given D,L-alpha-methyl-p-tyrosine methyl ester (aMT) intravenously. The delayed penetration of aMT from plasma into brain, the different elimination rates of aMT in plasma and brain, and the decreasing brain/plasma drug concentration on increasing aMT dosages indicated that aMT in brain and plasma belong to different pharmacokinetic compartments. In the time response experiment, endogenous levels of catecholamines declined to a minimum (dopamine, 38% of control; noradrenaline, 51% of control) 4 hours after aMT administration. In the dose response experiment, the decrease in endogenous catecholamine levels was dose related up to 0.407mmoles/kg aMT, with no further decline on higher doses. The maximal inhibition of brain catecholamine synthesis occurred within 30 minutes of aMT administration. The inhibition was dose related with a maximal synthesis inhibition of 95% for dopamine and 80% for noradrenaline. The duration of synthesis inhibition and storage depletion was shorter for noradrenaline (12 hours) than for dopamine (16 hours). The median effective dose for synthesis inhibition of dopamine (0.057mmole/kg) was half that for noradrenaline (0.117mmoles/kg), suggesting differential sensitivities toward aMT in the two neuron populations. 66 references. (Author abstract modified)

000395 Will, Peter C.; Noteboom, William D. Department of Anatomy, Case Western Reserve University, Cleveland, OH 44106 **Methadone induced lysis of mammalian cells.** Research Communications in Chemical Pathology and Pharmacology. 21(2):307-314, 1978.

Methadone induced lysis of human erythrocytes and mouse leukemic cells was studied. The cells lyse without the prior swelling that is a necessary step of colloid osomotic lysis. Methadone is accumulated by both cell types and is widely distributed intracelluarly in mouse leukemic cells. The maximum lytic rate is roughly proportional to the amount of methadone uptake, and the temperature dependence for lysis was equal to that for methadone partitioning between octanol and water. It is concluded that the cells lyse as a result of a nonspecific disruption of the plasma membrane. 30 references. (Author abstract)

000396 Williams, Jeffrey M.; Spratto, George R. Department of Pharmacology and Toxicology, School of Pharmacy and Pharmaceutical Sciences, Purdue University, West Lafayette, IN 47907 **Evidence of a long-term rhythm in withdrawal, brain concentration, and hepatic clearance of morphine in the rat.** Pharmacology (Basel). 17(2):88-97, 1978.

Naloxone hydrochloride (1.0mg/kg) was administered subcutaneously to precipitate withdrawal in Sprague-Dawley rats made dependent on morphine via morphine pellet implantation. A predictable and rhythmic cycle of approximately 6 weeks was observed in the number of wet dog shakes in morphine withdrawn rats. This rhythm was not sex related, and there was no discernible rhythm in total body weight loss during the withdrawal period. The intensity of the withdrawal response was inversely related to the brain concentration of morphine, but the periodicity of the rhythm in wet dog shakes was not similar to that of brain concentrations of morphine. An 8 month in vitro study of hepatic clearance of morphine in the nondependent rat revealed long-term fluctuations in the rate at which morphine was cleared from the rat liver. The development of dependence on morphine did not consistently alter the hepatic clearance of the drug. Results suggest that more than one mechanism controls the fluctuation of wet dog shakes and that seasonal factors are important variables in the determination of the effects of morphine dependence in the rat. 22 references. (Author abstract modified)

000397 Wolfe, Barry B.; Harden, T. Kendall; Sporn, Jonathan R.; Molinoff, Perry B. Department of Pharmacology C236, University of Colorado Medical Center, Denver, CO 80262 **Presynaptic modulation of beta adrenergic receptors in rat cerebral cortex after treatment with antidepressants.** Journal of Pharmacology and Experimental Therapeutics. 207(2):446-457, 1978.

Treatment with desmethylimipramine (DMI) for 7 to 21 days resulted in a 35-45% decrease in the accumulation of adenosine cyclic 3',5'-monophosphate (cAMP) in response to a maximally effective concentration of l-isoproterenol (ISO) in male Sprague-Dawley rat cerebral cortical slices. The diminution in responsiveness to catecholamines was accompanied by a 35-40% decrease in the density of beta-adrenergic receptors, as measured by the binding of labeled iodohydroxybenzylpindolol. The decreases in ISO sensitive cAMP accumulation and in beta-adrenergic receptor density were temporally correlated, with maximal decreases observed within 5 to 7 days; both measures returned to normal within 7 days after cessation of chronic DMI treatment. Treatment of newborn rats with 6-hydroxydopamine inhibited the development of noradrenergic nerve terminals in the cerebral cortex and blocked the effects of DMI on cortical cAMP accumulation and on beta-receptor density. The beta-adrenergic receptor antagonist, propranolol, increased maximal ISO stimulated cAMP accumulation and beta-adrenergic receptor density in cortex. Chronic treatment with the clinically effective antidepressants, pargyline and iprindole, produced effects similar to those seen with DMI. Results suggest that antidepressants act presynaptically to increase the concentration of transmitter at noradrenergic synapses and to induce a compensatory decrease in the density of beta-adrenergic receptors. 48 references. (Author abstract modified)

000398 Wong, David T.; Bymaster, Frank P. Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN 46206 **An inhibitor of dopamine uptake, LR5182, cis-3-(3,4-dichlorophenyl)-2-N,N-dimethylaminomethyl-bicyclo o-(2,2,2)-octane, hydrochloride.** Life Sciences. 23(10):1041-1048, 1978.

LR5182 ,cis-3-(3,4-dichlorophenyl)-2-N,N-dimethylaminomethyl-bicyclo-(2,2,2)- ctane hydrochloride, inhibited the uptake of dopamine (DA) in Sprague-Dawley rat striatal synaptosomes and the uptake of norepinephrine (NE) in cortical synaptosomes with inhibitor constants (Ki values) of 3nM and 58nM, respectively. LR5182 was only a weak inhibitor of serotonin uptake in cortical synaptosomes, with a Ki value of 1.7mcM. The uptakes of DA and NE were significantly lowered within an hour after an intraperitoneal injection of LR5182. Among known inhibitors of DA uptake in synaptosomes of rat brain, LR5182 is the most effective and selective. The rigid structure of LR5182 suggests that a gauche conformation of DA is favored by striatal DA uptake. 14 references. (Author abstract modified)

000399 Wong, Roderick; Jones, Wayne. Department of Psychology, University of British Columbia, Vancouver, Canada V6T 1W5 **Effects of aldactazide and DOCA injections on saline preference in gerbils (Meriones unguiculatus).** Behavioral Biology. 23(4):460-468, 1978.

The behavioral effect of aldactazide on gerbils was assessed. The percentage of sodium solution ingested by gerbils when given a choice between 4, 6, and 8% NaCl solution was determined. The gerbils showed a uniformly low level of acceptance of these hypertonic solutions. When given a choice between 4 and 8% NaCl, the gerbils showed a preference for the 4% saline solution. The effects of aldactazide on the gerbil intake of 6% NaCl solution were assessed. It was found that, relative to intake before and after the days of injection, the gerbils showed a significant increase in saline intake. A further experiment examined the effects of DOCA injections on the gerbils' intake of 6% NaCl, and found that effects were dose related. Injections of 5mg of DOCA significantly increased the saline intake, while injections of 1mg of the mineralocorticoid had no effect. 22 references. (Author abstract modified)

000400 Woody, C. D.; Swartz, B. E.; Gruen, E. Brain Research Institute, Department of Anatomy, UCLA Medical Center, Los Angeles, CA 90024 **Effects of acetylcholine and cyclic GMP on input resistance of cortical neurons in awake cats.** Brain Research (Amsterdam). 158(2):373-395, 1978.

The effects of input resistance (Rm) of extracellular iontophoresis of acetylcholine (ACh) and of intracellular iontophoresis of cyclic guanosine monophosphate (cGMP) were studied in neurons of the coronal pericruciate cortex of awake cats. Substantial increases in Rm occurred in approximately half the neurons given ACh or cGMP. In the absence of associated repetitive spike discharge induced by intracellular injection of depolarizing current pulses during iontophoretic applications, the increases in Rm were transient, occurring within 30 seconds and lasting 4-5 minutes. With associated current induced spike discharge, the increases in Rm persisted for as long as the neurons could be held, up to 1.5hours. Rm was not increased if saline was substituted for ACh, if 5'-GMP was substituted for cGMP, or if the neuron was only discharged repeatedly The magnitude and time course of both transient and persistent increases in Rm were comparable between cells given ACh or cGMP. 85 references. (Author abstract modified)

000401 Worms, Paul; Lloyd, Kenneth G. Synthelabo-LERS, Department of Biology, Neuropharmacology Unit, 31, avenue Paul Vaillant Couturier, F-92220 Bagneux, France **Differential blockade of bicuculline convulsions by neuroleptics.** European Journal of Pharmacology (Amsterdam). 51(1):85-88, 1978.

Haloperidol, pimozide, sulpiride, and metoclopramide blocked bicucullin induced convulsions in male Swiss CD1 mice. Chlorpromazine and thioridazine exhibited this effect at low doses, but at higher doses this activity was no longer apparent. A dose of phenoxybenzaimine that was inactive alone (7.5mg/kg) completely blocked the antibicuculline effect of sulpiride and antagonized that of haloperidol. Results suggest that intact noradrenergic systems are necessary for the antibicuculline effect of the neuroleptics. 10 references. (Author abstract modified)

000402 Wuerthele, S. M.; Lovell, K. L.; Jones, M. Z.; Moore, K. E. Dept. of Pathology and Pharmacology, Michigan State University, East Lansing, MI 48824 **A histological study of kainic acid-induced lesions in the rat brain.** Brain Research (Amsterdam). 159(2):489-497, 1978.

To investigate the selectivity of neural lesions induced by kainic acid (KA) and the similarity of these lesions to those observed in Huntington's disease, histological studies of the Sprague-Dawley rat CNS were conducted. Striatal KA injections produced a number of histological changes in areas similar to those affected in the brains of Huntington's disease patients. Nevertheless, the extent and nature of the pathology was substantially different from that in Huntington's disease. For example, microscopic examination of pathological specimens from the brains of Huntington's disease patients does not reveal destructive lesions such as those present in the area of injection and in the temporal lobe of KA injected rats. Thus, caution should be exercised in using intrastriatal KA injection as a model of Huntington's disease. 22 references.

000403 Yamaguchi, I.; Hiroi, J.; Fuke, H.; Kumada, S. Laboratory of Clincial Science, National Institute of Mental Health, Building 10, Room 2D-53, Bethesda, MD 20014 **Mechanism of gastric secretogogue effect of reserpine in rats.** Journal of Pharmacology and Experimental Therapeutics. 205(3):710-717, 1978.

Effects of reserpine on gastric secretion was studied in anesthetized and unanesthetized gastric fistula rats, and in unanesthetized pylorus ligated rats. In anesthetized fistula rats, reserpine (2.5mg/kg i.v.)increased acid secretion which peaked 3 to 4 hours after its administration (phase 1). Then the acid secretion returned to the control value and increased again at 18 to 20 hours after reserpine (phase 2). Atropine, hexamethonium and vagotomy partially inhibited phase 1. Phase 2 was more inhibited by atropine and hexamethonium, and it was completely abolished in vagotomized rats. Serum histamine levels increased significantly 3 hours after reserpine and returned to the control value 24 hours after reserpine. Serum gastrin levels decreased significantly 5 hours after reserpine and returned to the control value 24 hours after reserpine. In unanesthetized fistula rats, basal acid secretion was eight times that in anesthetized rats, and reserpine induced a monophasic increase of acid secretion which appeared immediately after reserpine and disappeared 8 hours later. In unanesthetized pylorus ligated rats, the basal acid output was comparable to that in unanesthetized fistula rats. The different effects of reserpine in different preparations are discussed, and it is concluded that reserpine induces biphasic gastric secretory stimulation by different mechanisms, i.e.,the initial one by a release of endogenous histamine, and the later one by a vagal enhancement. 26 references. (Author abstract)

000404 Yamamoto, Hiroaki; Harris, R. Adron; Loh, Horace H.; Way, E. Leong. National Institutes of Health, Bethesda, MD 20014 **Effects of acute and chronic morphine treatments on calcium localization and binding in brain.** Journal of Pharmacology and Experimental Therapeutics. 205(2):255-264, 1978.

Acute subcutaneous injection of 25mg/kg morphine in male Sprague-Dawley rats decreased synaptosomal calcium ion (Ca) levels by 29% without altering the Ca content of other subcellular fractions. In contrast, chronic morphine treatment of rats or ICR mice by pellet implantation selectively increased synaptosomal Ca levels by almost 100%. This morphine induced increase in Ca was blocked by simultaneous chronic administration of naloxone. The binding of low concentrations of labeled Ca to synaptic plasma membranes and of high concentrations of the ions to synaptic vesicles were increased by acute morphine treatment and decreased by chronic treatment. Changes in binding were not observed with other subcellular fractions. It is suggested that these highly selective changes in Ca levels and binding may reflect mechanisms by which acute morphine treatment interferes with synaptic transmission and by which chronic morphine overcomes these effects, resulting in tolerance and dependence. 36 references. (Author abstract modified)

000405 Yang, H.-Y. T.; Hong, J. S.; Fratta, W.; Costa, E. Laboratory of Preclinical Pharmacology, NIMH, Saint Elizabeths Hospital, Washington, DC 20032 **Rat brain enkephalins: distribution and biosynthesis.** Advances in Biochemical Psychopharmacology. 18:149-159, 1978.

The distribution and synthesis of enkephalins was studied in rat brain. The high content of met5-enkephalin in the striatum suggests that enkephalin may regulate extrapyramidal activity, and moderate met5-enkephalin levels in the periaqueductal gray suggest an involvement in pain perception. The high enkephalin levels found in the nucleus accumbens, amygdala, and interpeduncular nucleus may reflect an involvement of enkephalins in the regulation of emotive behavior. The presence of enkephalin in the hypothalamus clearly suggests that enkephalin plays a neuroendocrine role. 11 references.

000406 Yarbrough, G. G. Merck Institute for Therapeutic Research, West Point, PA 19486 **Nipecotic acid and 2,4-diaminobutyric acid enhance the actions of muscimol on cerebral cortical neurons.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(3):443-446, 1978.

The influence of nipecotic acid and 2,4-diaminobutyric acid (DABA) on the actions of muscimol on cerebral cortical neurons in female rats was investigated. Iontophoretically applied muscimol exerted a potent inhibitory action on the firing of spontaneously active cortical neurons; muscimol was considerably more potent than gamma-aminobutyric acid (GABA) and the inhibitions produced by muscimol were frequently of longer duration than those produced by GABA. Nipecotic acid and DABA consistently enhanced the inhibitory effects of both GABA and muscimol of cortical neurons, but did not affect inhibitions induced by monoamines or adenosine 5'-monophosphate. Results suggest that iontophoretically applied nipecotic acid and DABA have some specificity for amino acid mechanisms in the cortex, but their actions cannot be fully explained by a selective blockade of GABA uptake processes. It is suggested that DABA and nipecotic acid may exert a weak agonist action at amino acid receptors or that the actions of iontophoretically applied muscimol are partially terminated by uptake through GABA uptake systems. 6 references. (Author abstract modified)

000407 Yasukawa, Norie; Monder, Harvey; Michael, Sandra D.; Christian, John J. Department of Biological Sciences, State University of New York, Binghamton, NY 13901 **Opiate antagonist counteracts reproductive inhibition by porcine ACTH extract.** Life Sciences. 22(19):1381-1390, 1978.

The effects of naloxone, an opiate receptor antagonist, on the maturation of female mice chronically pretreated with adrenocorticotropic hormone (ACTH) from weaning were examined. Naloxone treatment, begun at 40 days of age, blocked ACTH-induced delay of puberty, and reversed decreases in weights of the reproductive organs produced by ACTH. Naloxone treatment also resulted in estrous cycling and increased the number of ACTH-treated mice with ovarian corpora lutea. These changes are reflected in increased luteinizing hormone levels in ACTH-naloxone-treated vs. ACTH-saline-treated animals. Naloxone alone may increase reproductive function. Effects of ACTH on spleen and thymus weights, presumably via the adrenals, were partially reversed by naloxone. It is concluded that ACTH may have a different mechanism in adrenal function as compared to reproductive function. 37 references. (Author abstract)

000408 Yeung, J. C.; Yaksh, T. L.; Rudy, T. A. School of Pharmacy, University of Wisconsin, Madison, WI 53706 **Effect on the nociceptive threshold and EEG activity in the rat of mor-**

phine injected into the medial thalamus and the periaqueductal gray. Neuropharmacology (Oxford). 17(7):525-532, 1978.

The effects of morhine on the nociceptive threshold and EEG activity of male Holtzmann rate were investigated. Intraperitoneal injection of morphine produced analgesia (measured by the tail flick and pinch agitation tests) and episodes of high voltage slow wave activity (HVSA) in the EEG. Morphine injected into the medial thalamus (MT) produced HVSA but not analgesia. Conversely, morphine injected into the periaqueductal gray (PAG) or into the lumbar subarachnoid space produced analgesia but did not alter EEG activity. These data indicate that the MT may mediate the EEG alterations produced by systemically administered morphine and that HVSA and analgesia are independent actions of morphine mediated by different neuroanatomical substrates. The mechanism and functional significance of the cortical HVSA produced by morphine are discussed. 57 references. (Author abstract modified)

000409 Zagon, Ian S.; McLaughlin, Patricia J. Department of Anatomy, Milton S. Hershey Medical Center, Pennsylvania State University, Hershey, PA 17033 **Perinatal methadone exposure and brain development: a biochemical study.** Journal of Neurochemistry (Oxford). 31(1):49-54, 1978.

The neurochemical effect of maternally administered DL-methadone hydrochloride (5mg/kg) on the brain of offspring exposed during gestation or lactation was investigated in 10, 21, and 60-day-old Sprague-Dawley rats. Brain weights were significantly reduced in all methadone exposed groups (gestation, lactation, or both) at 10 days of age, while only rats exposed to methadone during either gestation or lactation had deficits in brain weights at day 21; no differences were found at 60 days. Brain deoxyribonucleic acid (DNA) content was significantly reduced in all opiate exposed offspring at every age examined, but ribonucleic acid (RNA)/DNA and protein/DNA ratios were consistently increased only in rats exposed during gestation. Rats exposed to methadone during lactation showed the greatest number of alterations in RNA and protein, with large decreases in cellular RNA content on days 21 and 60 and a reduction in the mean cellular protein content on day 60. Results indicate that prenatal or postnatal methadone treatment affects the biochemical maturation of the CNS. 33 references. (Author abstract modified)

04 MECHANISM OF ACTION: BEHAVIORAL

000410 Al-Shabibi, U. M. H.; Doggett, N. S. Department of Pharmacology, Welsh School of Pharmacy, UWIST, Cardiff, Wales **On the central noradrenergic mechanism involved in haloperidol-induced catalepsy in the rat.** Journal of Pharmacy and Pharmacology (London). 30(8):529-530, 1978.

Noradrenergic involvment in haloperidol-induced catalepsy was investigated in the rat. Rats were administered various doses of FLA-63 (bis(4-methyl-11-homopiperazinylthiocarbonyl) disulfide), clonidine, yohimbine HCl, phentolamine HCl, or phenoxybenzamine HCl intraperitoneally or intravenously prior to receiving a submaximal cataleptogenic dose of haloperidol. FLA-63-induced catalepsy with marked behavioral sedation at 25 but not at a 15 mg/kg-1 dose. Phenoxybenzamine shows no significant effect at 10 mg/kg-1, but potentiated catalepsy at a 20 mg/kg-1 dose. Clonidine antagonized haloperiodol catalepsy at low doses, but paradoxically, some behavioral sedation was seen. Yohimbine -treated animals exhibited hyperactivity and stereotyped movements. Results indicate that brain noradrenergic mechanisms play more than a modulatory role in haloperidol-induced catalepsy. 5 references.

000411 Amir, Shimon; Amit, Zalman. Center for Research on Drug Dependence, Department of Psychology, Concordia University, Montreal, Quebec H3G 1M8, Canada **Endogenous opioid ligands may mediate stress-induced changes in the affective properties of pain related behavior in rats.** Life Sciences. 23(11):1143-1152, 1978.

The effects of single or repeated daily sessions of immobilization stress on hot plate paw lick and escape responses were investigated in male Wistar rats. Immobilization prior to testing resulted in increased latency to escape but had no effect on paw lick response. Naloxone pretreatment reversed the effect of immobilization on escape behavior. These results suggest that immobilization induced changes in pain behavior are mediated by an opiate receptor ligand system and that this endogenous system may mediate the affective but not sensory properties of pain-related behavior. 50 references. (Author abstract modified)

000412 Antelman, Seymour M.; Caggiula, Anthony R.; Black, Cynthia A.; Edwards, David J. Psychobiology Program, Department of Psychology, University of Pittsburgh, Pittsburgh, PA 15260 **Stress reverses the anorexia induced by amphetamine and methylphenidate but not fenfluramine.** Brain Research (Amsterdam). 143(3):580-585, 1978.

The effects of tail-pinch stress on the anorexia induced by amphetamine, methylphenidate, and fenfluramine were investigated in male Sprague-Dawley rats. Amphetamine and methylphenidate failed to suppress stress-induced feeding. In contrast, fenfluramine retained its anorectic properties even under stressful circumstances. Results suggest that fenfluramine may be a more effective (although not necessarily safer) anorectic in treating cases of stress or emotion related overeating. 22 references.

000413 Arceneaux, Janice H.; Kohn, Harold; Steenberg, Marie Louise; Buckley, Joseph P. Department of Chemistry, University of Houston, Houston, TX 77004 **Syntheses and pharmacological activity of N-acyl-substituted imidazolidinethiones and thioimidazolines.** Journal of Pharmaceutical Sciences. 67(5):600-602, 1978.

A series of imidazolidinethiones and thioimidazolines was synthesized and tested for their effects on forced and spontaneous motor activities and on the convulsion threshold in male Swiss-Webster mice. The N-acyl-substituted 2-p-fluorobenzylthioimidazolines were the most active compounds, decreasing motor activity and producing protection against maximal electroshock seizures and tonic convulsions induced by pentylenetetrazol. Both compounds had high median lethal dose values and safety indexes. 9 references. (Author abstract modified)

000414 Balthazart, J. Laboratoire de Biochimie generale et comparee, Universite de Liege, 17 place Delcour, B-4020 Liege, Belgium **Behavioural and physiological effects of testosterone propionate and cyproterone acetate in immature male domestic ducks, anas platyrhynchos.** Zeitschrift fur Tierpsychologie (Berlin) 47(4):410-421, 1978.

The behavioral and morphological effects of testosterone propionate and cyproterone acetate were studied in male domestic ducks. Testosterone was also measured by radioimmunoassay in the plasma of the ducks to relate the behavior to the actual circulating levels of hormone. Results indicate that testosterone stimulates sexual behavior but has few effects on social displays. No correlation between individual variations of plasma testosterone and sexual behavior was found. 17 references. (Author abstract modified)

000415 Bareggi, S. R.; Gomeni, R.; Becker, R. E. Istituto Farmacologia, Universita di Milano, Milan, Italy **Stereotyped behavior and hyperthermia in dogs: correlation with the levels of am-**

phetamine and p-hydroxyamphetamine in plasma and CSF. Psychopharmacology (Berlin). 58(1):89-94, 1978.

The relationship between amphetamine (A), p-hydroxyamphetamine (pOA) levels, and behavior in dogs was investigated. A gas chromatographic method for measuring pOA against A in plasma and cerebrospinal fluid (CSF) after an acute dose of A showed that the A levels in CSF decreased steadily in the following hours and simultaneously with the levels of A in plasma. Stereotyped behavior (St) reached maximal value 2.5hours after A, as did levels of A in CSF. However, St remained elevated and began to decrease after 6.5hours. An exponential relationship between St and amounts of A suggested that both A and its metabolite pOA contributed to this effect. Linear relationships were found between St and the amounts of pOA in CSF, as well as between body temperature and the amounts of A in plasma. It is concluded that the presence of A in the central nervous system is responsible for the onset of St, while pOA contributes to the maintenance of this effect. 22 references. (Author abstract modified)

000416 Barkley, Marylynn S.; Goldman, Bruce D. Department of Animal Science, University of California, Davis, CA 95616 **Studies on opponent status and steroid mediation of aggression in female mice.** Behavioral Biology. 23(1):118-123, 1978.

The effects of testosterone or estradiol-17beta on the aggressive behavior of adult female mice paired against olfactory bulbectomized male opponents was explored. Ovariectomized females implanted with Silastic capsules containing testosterone repeatedly attacked their opponents, but females implanted with estradiol remained nonaggressive. In a second experiment, females implanted with testosterone were highly aggressive toward intact male opponents. These females were less aggressive toward intact females, but they did not distinguish behaviorally between male and female opponents as distinctly as intact males did. It is suggested that androgen-treated females are less responsive than are males to aggression-inhibiting stimuli from female opponents. 13 references, (Author abstract)

000417 Bedard, P.; Dankova, J.; Boucher, R.; Langelier, P. Laboratoires de neurobiologie, Pavillon Notre-Dame, 2075, ave de Vitre, Quebec, Quebec, Canada G1J 5B3 **Effects of estrogens on apomorphine-induced circling behavior in the rat.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(3):538-541, 1978.

The effect of parenteral administration of estrogens for 1 week on apomorphine-induced circling behavior was investigated in castrated female rats with a lesion of the left entopeduncular nucleus. A significant decrease in the number of turns per minute was observed in the estrogen-treated animals, compared to lesioned controls. These findings are in agreement with clinical evidence that estrogens potentiate factors interferring with dopaminergic transmission, as in drug-induced parkisonism or Parkinson's disease itself. It is suggested that estrogens decrease the sensitivity of dopamine receptors in the striatum. 17 references. (Author abstract modified)

000418 Benakis, A. Dept. of Pharmacology, Laboratory of Drug Metabolism, University of Geneva, Geneva, Switzerland **Potentiation of ()-amphetamine-induced hypermotility in hypophysectomized rats.** Progress in Neuro-Psychopharmacology. 2(2):233-235, 1978.

Hypophysectomized rats exhibited an enhancement in locomotor stimulation (hypermotility) induced by amphetamine in comparison with normal rats. In hypophysectomized animals, a first period of about 45 min was characterized by relatively low activity, whereas the opposite has been observed in normal animals which showed the maximum locomotor activity during this period. Concerning the mechanism of action, there is relative agreement that the increase of motor activity due to amphetamine is the result of stimulation of both dopaminergic (DA) and noradrenergic (NA) systems. A possible hypothesis to explain this difference is that the amphetamine localized in the hypophysis induces a factor which interacts competitively against the amphetamine stimulation at the level of the DA and NA receptors. 14 references.

000419 Berman, Robert F.; Kesner, Raymond P.; Partlow, Lester M. Department of Biochemistry, Division of Chemical Neurobiology, University of North Carolina, Chapel Hill, NC 27514 **Passive avoidance impairment in rats following cycloheximide injection into the amygdala.** Brain Research (Amsterdam). 158(1):171-188, 1978.

Passive-avoidance behavior was studied in male Long-Evans rats following injection of 1, 10, or 20mcg cycloheximide (CHX) into various regions of the brain. Rats with 10 or 20mcg CHX injected into the amygdala immediately after training footshock exhibited amnesia for the learning experience when tested after 24 hours; injection of 1mcg CHX into the amygdala had no effect. Rats injected with 20mcg CHX at a site either in the internal capsule only 2 mm above the amygdala injection site or in the frontal cortex showed no retention deficit. Total protein synthesis in brain 30 minutes after unilateral injection of 20mcg CHX was inhibited by less than 10%. Autoradiographic studies reveal that this inhibition resulted from a profound, highly localized inhibition of protein synthesis in areas immediately adjacent to the injection cannula. Injection of 20mcg CHX into the amygdala had no effect on short-term retention or short-term performance, and injection of 20mcg CHX into the amygdala 12 hours after footshock had no effect on long-term retention. 46 references. (Author abstract modified)

000420 Bhargava, Hemendra N. Dept. of Pharmacognosy and Pharmacology, College of Pharmacy, University of Illinois at the Medical Center, Chicago, IL 60612 **New in vivo evidence for narcotic agonistic property of leucine-enkephalin.** Journal of Pharmaceutical Sciences. 67(1):136-137, 1978.

New in vivo pharmacological evidence for narcotic agonist-like activity of leucine-enkephalin is presented. Administration of leucine-enkephalin intracerebrally or morphine to mice rendered dependent on morphine by pellet implantation inhibited the naloxone precipitated abstinence syndrome. The withdrawal jumping response was inhibited by morphine or leucine-enkephalin; however, both failed to inhibit withdrawal defecation and rearing behavior. On a molar basis, leucine-enkephalin was half as potent as morphine in inhibiting the abstinence syndrome. 21 references. (Author abstract modified)

000421 Bhargava, Hemendra N. Department of Pharmacognosy and Pharmacology, University of Illinois at the Medical Center, Chicago, IL 60612 **Effects of methionine-enkephalin and morphine on spontaneous locomotor activity: antagonism by naloxone.** Pharmacology Biochemistry and Behavior. 9(2):167-171, 1978.

The effects of various doses of intracerebroventricularly administered morphine sulfate and methionine-enkephalin (MEK) on the motor activity of male Swiss-Webster mice were investigated. In a dose of 1.75mcmoles/kg, MEK significantly depressed motor activity 30 minutes after administration, but not at earlier times, while morphine had no effect on activity. Higher doses (7.0mcmoles/kg) of both MEK and morphine produced profound depression in motor activity from 6-30 minutes after administration. Subcutaneous administration of 1mg/kg naloxone did not alter motor activity. However, naloxone injected 2 minutes prior to the higher doses of MEK or morphine

blocked the effect of MEK for 15 minutes and that of morphine for 10 minutes. MEK in doses of 0.2and 0.4mcmoles/kg had no effect on motor activity during the 1-hour observation period. A significant increase in motor activity was recorded 45 and 60 minutes after 0.2mcmole/kg morphine, whereas a 0.4mcmole/kg dose of morphine significantly increased activity only at 60 minutes after administration. It is concluded that morphine and MEK produce differential effects on mouse spontaneous motor activity with respect to time and dose, and that naloxone inhibits the effects of MEK on motor activity more effectively than those of morphine. 27 references. (Author abstract modified)

000422 Biggio, G.; Corda, M. G.; Casu, M.; Gessa, G. L. Institute of Pharmacology, University of Cagliari, Via Porcell, 4, I-09100 Cagliari, Italy **Kainic acid-induced lesion of dopaminergic target cells in the striatum: consequences on the dynamics of cerebellar cGMP.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(1):5-7, 1978.

Bilateral intrastriatal injection of kainic acid (2mcg/caudate) caused a marked decrease in the activity of striatal dopamine sensitive adenylate cyclase. This probable loss of target cells for dopamine was associated with a parallel decrease of the cyclic guanosine monophosphate (GMP) level in the cerebellar cortex, which was maximal (80% loss) by 24 hours. Apomorphine increased and haloperidol decreased the cyclic GMP levels in cerebellar cortex of intact rats, but neither compound had any effect in rats treated with kainic acid. In contrast, harmaline and isoniazid both increased the levels of cerebellar cyclic GMP in kainic-acid-lesioned rats to the same extent as in control rats. Results indicate that dopamine mechanisms in the striatum are involved in the regulation of cerebellar cortex cyclic GMP. 20 references. (Author abstract modified)

000423 Billingsley, Melvin L.; Kubena, Robert K. Biomedical Research Department, Stuart Pharmaceuticals, Division of ICI Americas Inc., Wilmington, DE 19897 **The effects of naloxone and picrotoxin on the sedative and anticonflict effects of benzodiazepines.** Life Sciences (Oxford). 22(10):897-906, 1978.

Naloxone reversed the anticonflict activity of chlordiazepoxide (CDP) in male Wistar rats in a model of experimental conflict behavior, the Conditioned Suppression of Drinking Test. Naloxone and picrotoxin antagonized the effects of CDP in the Geller Conflict Test, an operant model of conflict behavior. Naloxone and picrotoxin also antagonized the loss of righting reflexes induced by CDP; naloxone had no effect on the loss of righting reflexes induced by barbiturates or meprobamate. Results suggest that naloxone may be useful in the management of benzodiazepine overdoses. 14 references. (Author abstract modified)

000424 Bodnar, Richard J.; Kelly, Dennis D.; Brutus, Martin; Mansour, Alfred; Glusman, Murray. Department of Behavioral Physiology, New York State Psychiatric Institute, New York, NY **2-Deoxy-D-glucose-induced decrements in operant and reflex pain thresholds.** Pharmacology Biochemistry and Behavior. 9(4):543-549, 1978.

The analgesic effects of 2-deoxy-D-glucose (2-DG), an antimetabolic glucose analogue that induces glucoprivation and peripheral sympathoadrenal discharge, were studied in male Sprague-Dawley rats. In an operant liminal escape paradigm, nine rats were tested at weekly intervals in six randomly-selected testing conditions: 30-minute pretest injections of 100, 225, 350, or 700mg/kg 2-DG or 180-minute pretest injections of the 350 or 700mg/kg 2-DG. Moderate analgesia occurred at the lower 2-DG doses 30 minutes after injection, and profound analgesia occurred after the higher doses. After 180 minutes, only the 700mg/kg dose produced moderate analgesia, which was further enhanced by food deprivation. Rats tested in a tail-pinch paradigm showed a similar dose-dependent course of analgesia. Results indicate that 2-DG decreases nociceptive sensitivity, possibly through stress-induced activation of an intrinsic pain inhibitory system. 57 references. (Author abstract modified)

000425 Boggan, William O.; Medberry, Chuck; Hopkins, David H. Department of Psychiatry and Behavioral Sciences and Biochemistry, Medical University of South Carolina, Charleston, SC 29401 **Effect of taurine on some pharmacological properties of ethanol.** Pharmacology Biochemistry and Behavior. 9(4):469-472, 1978.

The effects of taurine on ethanol-induced sleeping time, decreases in body temperature, seizure susceptibility, and increases in brain 5-hydroxyindoleacetic acid (5-HIAA) concentration were investigated in male C57BL/6J mice. When injected simultaneously with ethanol, taurine effectively reduced the hypnotic effect of ethanol. However, taurine did not antagonize the effect of ethanol on seizure susceptibility, body temperature, or brain 5-HIAA concentration. 36 references. (Author abstract modified)

000426 Borison, Richard L.; Sabelli, Hector C.; Maple, Philip J.; Havdala, Henri S.; Diamond, Bruce I. Anesthesiology Department, Mount Sinai Hospital, California at 15th Place, Chicago, IL 60608 **Lithium prevention of amphetamine-induced 'manic' excitement and of reserpine-induced 'depression' in mice: possible role of 2-phenylethylamine.** Psychopharmacology (Berlin). 59(3):259-262, 1978.

Repeated intraperitoneal (ip) treatment of male Swiss mice with lithium chloride (45mg/kg daily for 8 days) reduced the jumping, fighting, stereotypy, and hyperactivity induced by d-amphetamine (5mg/kg ip). Lithium also reduced the hypoactivity observed 1-3 hours after reserpine (0.75mg/kg ip). Treatment with lithium for 8 days markedly reduced (to 45% of control) the recovery from brain of labeled 2-phenylethylamine (PEA) following ip injection of labeled L-phenylalanine, and decreased recovery from brain of labeled PEA following its ip injection to 63% of control. In saline-treated mice, d-amphetamine appeared to increase PEA synthesis and to accelerate its disposition, while reserpine enhanced PEA synthesis and reduced disposition; all of these effects were antagonized by lithium pretreatment. Since PEA appears to be one of the most powerful behavioral stimulants among endogous neuroamines and since its deaminated metabolites are behavioral depressants, this antagonism of PEA metabolism may significantly contribute to the prophylactic action of lithium against manic and depressive behavior. 13 references. (Author abstract modified)

000427 Boyd, Eugene S.; Boyd, Eleanor H.; Brown, Lawrence E. Department of Pharmacology and Toxicology, University of Rochester Medical Center, 601 Elmwood Avenue, Rochester, NY 14642 **Effects of some psychotropic drugs on M-wave and operant behavior in the squirrel monkey.** Journal of Pharmacology and Experimental Therapeutics. 207(2):521-531, 1978.

The effects of low doses of nabilone, chlorpromazine, pentobarbital, meprobamate, diazepam, chlordiazepoxide, and d-amphetamine on behavioral responding to cues signalling the availability of food rewards and on the M-wave, an evoked cortical potential previously reported to reflect the conditioned incentive value of the cues, were determined in the squirrel monkey. Nabilone and chlorpromazine simultaneously depressed both the M-wave and behavior. Pentobarbital, meprobamate, diazepam, and chlordiazepoxide could depress the M-wave without depressing behavior; this effect was most marked with diazepam. The only augmentation of the M-wave observed was with d-amphetamine, and this occurred in only one of the animals. The

benzodiazepines were the only drugs that augmented behavioral output. However, diazepam occasionally increased the number of cues responded to, while concomitantly decreasing both total behavioral output and the amplitude of the M-wave. It is concluded that the M-wave cannot directly reflect the incentive value of the cue, but must reflect something that tends to parallel this value. 22 references. (Author abstract)

000428 Breese, George R.; Vogel, Richard A.; Mueller, Robert A. 226 Biological Sciences Research Center, University of North Carolina School of Medicine, Chapel Hill, NC 27514 **Biochemical and behavioral alterations in developing rats treated with 5,7-dihydroxytryptamine.** Journal of Pharmacology and Experimental Therapeutics. 205(3):587-595, 1978.

The biochemical and behavioral effects caused by the intracisternal administration of 5,7-dihydroxytryptamine (5,7-DHT) in immature rats were studied. The drug produced a marked reduction of brain norepinephrine and serotonin. Accompanying these reductions of brain amines were a decrease in bodyweight and alterations in behavior. After treatment with 5,7-DHT at 3 days of age, locomotor activity was significantly elevated at 14 days of age, but was reduced at 28 days of age. The drug alone also induced a significant deficit in acquisition of the shuttle box avoidance response and blocked body movements observed after decapitation. Treatment with either pargyline or desipramine before injection of 5,7-DHT eliminated the effect of 5,7-DHT on noradrenergic fibers while enhancing the effects of 5,7-DHT on brain serotonergic fibers. These treatments also minimized the deficits of 5,7-DHT on growth and on acquisition of the avoidance response, and reversed the blockade of decapitation convulsions. However, animals pretreated with pargyline or desipramine before they received 5,7-DHT still demonstrated hyperactivity at 14 days of age equivalent to that observed in neonates receiving only 5,7-DHT. Furthermore, a behavioral syndrome induced by 30mg/kg of 5-hydroxytryptamine was markedly potentiated by all of the 5,7-DHT treatments, which suggests that serotonin receptors were supersensitive. 31 references. (Author abstract modified)

000429 Brennan, Michael John. State University of New York at Binghamton **The effects of post-training strychnine treatment on the long term retention of discrimination training by mice. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 78-7977, HC$15. MF$7.50. 121 p. 1978.

To investigate the effects of posttraining strychnine treatment on the retention of specific memory attributes over time, heterogeneous strain Binghamton HET mice were administered i.p. injections of either strychnine sulfate 1.0mg/kg or saline after training on a discrimination problem with two relevant redundant stimulus cues. After retention intervals of either 1, 3, or 27 days, mice were tested under complete cue reversal or relearning conditions (cues unchanged). Strychnine was found to have enhanced the memory of specific, rather than more general, contextual aspects of the training situation. The effect of post-training strychnine treatment, however, appeared to be short lived. It is suggested that while strychnine treatment may have strengthened specific memory attributes. The possibility is also raised that strychnine treatment may bias the manner in which the memory of a learning event is processed, in such a way that the memory may be less accessible for retrieval after long retention intervals. (Journal abstract modified)

000430 Brown, Z. W.; Amit, Z.; Sinyor, D.; Rockman, G. E.; Ogren, S.-O. Concordia University, Department of Psychology, Montreal, Quebec, Canada **Suppression of voluntary ingestion of morphine by inhibition of dopamine-beta-hydroxylase.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 232(1):102-110, 1978.

The effects of treatment with the nontoxic dopamine-beta-hydroxylase (DBH) inhibitor 4-methyl-1-homopiperazinedithiocarboxylic acid (FLA-57) on the voluntary oral ingestion of morphine solutions were investigated in male Wistar rats. Following stabilization of baseline levels of morphine consumption, the animals were injected for 5 consecutive days with either FLA-57 (45 or 60mg/kg ip) or its vehicle. The FLA-57 treated rats significantly attenuated their preferences for morphine during the injection and postinjection periods, but there were no significant dose-related effects. These treatments produced a concomitant reduction in central norepinephrine levels, suggesting that norepinephrine may be involved in the mediation of the reinforcing properties of morphine in rats. The possibility of common neural mechanisms regulating the pharmacological actions of morphine and ethanol are discussed. 45 references. (Author abstract modified)

000431 Browning, Ronald A.; Maynert, Everett W. Southern Illinois University School of Medicine, Carbondale, IL 62901 **Effect of intracisternal 6-hydroxydopamine on seizure susceptibility in rats.** European Journal of Pharmacology (Amsterdam). 50(2):97-101, 1978.

Seizure susceptibility was assessed in male Sprague-Dawley rats with 60-70% depletion of brain catecholamines produced by intracisternal injections of 6-hydroxydopamine. Evidence for increased sensitivity to seizures was obtained on three tests: electroshock seizure threshold, maximal electroshock seizure pattern, and flurothyl-induced seizure pattern. All animals had normal rectal temperatures at the times of seizure testing and normal blood chemistry at the time of the third seizure test. These results support the hypothesis that brain catecholaminergic neurons play a fundamental role in governing sensitivity to convulsions. 21 references. (Author abstract modified)

000432 Brus, R.; Herman, Z. S.; Szkilnik, R.; Slominska-Zurek, J.; Zabawska, J.; Jamrozik, Z.; Kryk, A. Department of Pharmacology, Biological-Physiological Institute of Silesian School of Medicine, Katowice, Marksa 38, 41-808, Zabrze, Poland **Influence of polyphloretin phosphate on the central effects of prostaglandin E2 and F2alpha in rats.** Psychopharmacology (Berlin). 59(3):273-277, 1978.

The possibility that polyphloretin phosphate (PPP) antagonizes the central effects elicited by prostaglandin (PG) E2 and F2alpha was investigated. PPP (19 or 25mcg) was administered intracerebroventricularly (icv) to male Wistar rats 10 or 30 minutes before injection of PGE2 or PGF2alpha (1 or 10mcg, icv). PPP antagonized temperature and behavioral changes induced in rats by PGF2alpha, but not those induced by PGE2. The magnitude of antagonism depended on the dose time of pretreatment with PPP. Changes in the level of biogenic amines in discrete brain areas evoked by PGs were not affected by PPP. It is concluded that PPP antagonizes the central effects of PGF2alpha but not those of PGE2, and that changes in biogenic amines in discrete brain areas elicited by PGs are not specific. 29 references. (Author abstract modified)

000433 Buckalew, L. W. Alabama A & M University, Normal, AL 35762 **Effect of maternal alcohol consumption during nursing on offspring activity.** Research Communications in Psychology, Psychiatry and Behavior. 3(4):353-358, 1978.

The influence of neonatal alcohol exposure, through nursing, on offspring activity was investigated in mice with allowance for genetics and withdrawal effects. One of two litters of mice bred from the same parents was maternally exposed to alcohol through nursing. A significant decrement in activity was found

in exposed offspring compared to unexposed controls. This hypoactivity was felt to constitute a pharmacological effect on behavior as opposed to the neurological effect suspected in gestation exposure. 7 references. (Author abstract modified)

000434 Calil, Helena M.; Nakano, Shigeyuki; Hollister, Leo E. Veterans Administration Hospital, Palo Alto, CA 94304 **Effects of 5-hydroxytryptophan, oxotremorine, and tetrahydroaminoacridine on apomorphine-induced stereotypy.** Psychopharmacology (Berlin). 58(1):115-116, 1978.

The effects of tacrine (THA), the serotonin precursor L-5-hydroxytryptophan (5-HTP) and oxotremorine (OT) on apomorphine-induced stereotypy were examined in naive 3-month-old male Wistar rats. The stereotyped behavior induced by apomorphine in rats was inhibited by OT and THA. 5-HTP did not change stereotypy scores. The data show the influence of cholinergic mechanisms on such behavior. Possible clinical applications are discussed. 9 references. (Author abstract modified)

000435 Carrer, Hugo F. Instituto de Investigacion Medica Mercedes y Martin Ferreyra, Casilla de Correo 389, 5000 Cordoba, Argentina **Mesencephalic participation in the control of sexual behavior in the female rat.** Journal of Comparative and Physiological Psychology. 92(5):877-887, 1978.

Two experiments (n=25;n=42) were conducted to elucidate mesencephalic participation in the control of sexual behavior in the female rat. Electrical stimuli applied to both pudendal nerves evoked field potentials, unit responses, and multiunit responses in the ventrolateral midbrain, in and around the peripeduncular nucleus. Bilateral lesions in this region suppressed sexual behavioral responses (lordosis and courting behavior) of ovariectomized rats primed with 5, 10, 100, and 1000mcg of estradiol benzoate and 2mg of progesterone per kilogram of body weight. It is proposed that the region in question represents a relay station for the integration of sensory and endocrine information concerned in the control of receptive sexual behavior in the female rat. 54 references. (Author abstract modified)

000436 Carroll, Marilyn E.; Meisch, Richard A. Psychiatry Research Unit, Mayo Box 392, University of Minnesota, Minneapolis, MN 55455 **Etonitazene as a reinforcer: oral intake of etonitazene by rhesus monkeys.** Psychopharmacology (Berlin). 59(3):225-229, 1978.

Drinking of etonitazene hydrochloride was studied in three rehesus monkeys during daily 3-hour sessions. As the drug concentration was increased, the number of liquid deliveries decreased, and etonitazene intake increased. As fixed ratio requirements were increased, rate of responding increased and liquid deliveries slightly decreased. When water was substituted for the drug, there was a large increase in responding for several sessions, followed by a slow decline to low rates. When etonitazene was reintroduced, responding abruptly increased to previous drug levels. Results suggest that etonitazene can serve as a positive reinforcer when taken orally by rhesus monkeys. 11 references. (Author abstract)

000437 Carter, C. J.; Pycock, C. J. Department of Pharmacology, Medical School, University of Bristol, Bristol BS8 1TD, England **Differential effects of central serotonin manipulation on hyperactive and stereotyped behaviour.** Life Sciences. 23(9):953-960, 1978.

The locomotor response induced by the injection of dopamine into the nucleus accumbens of male Porton rats was attenuated by the injection of 5-hydroxytryptamine (5-HT) and potentiated by the injection of methysergide into the same site. Locomotor activity induced by d-amphetamine was also reduced by the intraaccumbens injection of 5-HT. In contrast, apomorphine induced stereotyped behavior (sniffing, licking, biting, gnawing) was reduced by systemic injection of the putative 5-HT receptor antagonists cyproheptadine and metergoline. In addition, the low intensity sniffing responses produced by a low dose of apomorphine were converted to high intensity biting, gnawing, or licking by the putative 5-HT receptor agonist quipazine or the putative 5-HT uptake blocker ORG-6582. The selective induction of either hyperactive or stereotyped behavior may therefore be influenced by the functional state of central 5-HT receptors. 22 references. (Author abstract)

000438 Carter, Richard B.; Appel, James B. Department of Pharmacology, School of Medicine, University of North Carolina, Chapel Hill, NC 27514 **LSD and 5-HTP: tolerance and cross-tolerance relationships.** European Journal of Pharmacology (Amsterdam). 50(2):145-148, 1978.

Tolerance and cross-tolerance relationships between lysergic acid diethylamide (LSD) and 5-hydroxytryptophan (5-HTP) were studied in rats trained on an operant task. Behavioral tolerance to both compounds was observed. Animals tolerant to 5-HTP were cross-tolerant to LSD, but animals tolerant to LSD were not cross-tolerant to 5-HTP. 9 references. (Author abstract modified)

000439 Carter, Richard B.; Dykstra, Linda A.; Leander, J. David; Appel, James B. Department of Pharmacology, School of Medicine, University of North Carolina, Chapel Hill, NC 27514 **Role of peripheral mechanisms in the behavioral effects of 5-hydroxytryptophan.** Pharmacology Biochemistry and Behavior. 9(2):249-253, 1978.

The effects of 5-hydroxytryptophan (5-HTP) were studied in male Sprague-Dawley rats trained to press a lever under a fixed ratio 32 schedule of water presentation. Responding was decreased in a dose-related manner by l-5-HTP, d-5-HTP, or d,l-5-HTP. The levo isomer (12.5-25mg/kg) was twice as potent as the racemic form (25-50mg/kg) in this respect. Moderate doses of d-5-HTP (less than 100mg/kg) did not affect responding, but 200mg/kg produced almost complete suppression. The response decrement produced by 25mg/kg l-5-HTP was completely antagonized by pretreatment with 50 or 400mg/kg of the decarboxylase inhibitor, bensarazide. The specific peripheral decarboxylase inhibitor, carbidopa (50mg/kg), and the serotonergic antagonist, xylamidine tosylate (1mg/kg), also antagonized the effects of 25mg/kg l-5-HTP. Results suggest that some of the behavioral effects of 5-HTP are due to increases in levels or turnover of 5-HTP in peripheral serotonergic systems. 17 references. (Author abstract modified)

000440 Catlin, Don H.; George, Robert; Li, Choh Hao. Department of Pharmacology, University of California, Los Angeles, CA 90024 **Beta-endorphin: pharmacologic and behavioral activity in cats after low intravenous doses.** Life Sciences. 23(21):2147-2154, 1978.

Synthetic human beta-endorphin (Bh-EP), an opiate-like peptide, produced characteristic responses immediately after intravenous (iv) injection in seven unrestrained male cats. Doses of 50mcg/kg resulted in a dose-dependent high-frequency (more than 1/second) licking and diminished locomotion. At higher doses (100-500microg/kg), the responses included vomiting and relaxation of the nictitating membrane. The responses were blocked by naloxone hydrochloride (1.Omg/kg, iv) administered 10 minutes prior to Bh-EP. When administered after Bh-EP, naloxone reversed the established response. Results indicate that low iv doses of Bh-EP are active in the cat and that the effects are mediated by opiate receptors. 27 references. (Author abstract)

000441 Chait, L. D.; Balster, Robert L. Department of Pharmacology, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298 **Effects of combinations of phencyclidine and pentobarbital on schedule-controlled behavior in the squirrel monkey.** Pharmacology Biochemistry and Behavior. 9(2):201-205, 1978.

The interaction between phencyclidine (PCP) and pentobarbital (PB) was examined in three squirrel monkeys trained on a variable-interval schedule of food presentation. PCP caused small dose response rate increases at low doses and a dose-dependent decrease in responding at higher doses. PB caused only dose-dependent decreases in responding. When PB was given in combination with PCP, PCP did not enhance the depressant properties of PB; most combinations caused less disruption of responding than expected from simple addition of the effects of each drug given alone. Results are discussed in terms of species differences, measurement of different dependent variables, and rate dependency. 16 references. (Author abstract modified)

000442 Chambers, David M.; Jefferson, Gordon C.; Ruddick, Carol A. Pharmacology Section, Department of Pharmacy, Heriot-Watt University, 79 Grassmarket, Edinburgh, EH1 2HJ, England **Halothane-induced sleeping time in the mouse: its modification by benzodiazepines.** European Journal of Pharmacology (Amsterdam). 50(2):103-112, 1978.

The effects of amphetamine, chlorpromazine, histamine, morphine, nikethamide, pentobarbitone, chlordiazepoxide, diazepam, medazepam, nitrazepam, and oxazepam on halothane-induced sleeping time in mice were investigated. Results from sleeping time experiments, as well as measurements of body temperature and brain halothane concentrations, suggest that the halothane/benzodiazepine interaction is due to additive CNS depressant effects. Nitrazepam and diazepam were more potent than chlordiazepoxide, medazepam, and oxazepam in their interactions with halothane. It is concluded that halothane sleeping time in mice offers practical advantages over barbiturate hypnotic methods as a test for centrally active drugs. 21 references. (Author abstract modified)

000443 Cheal, MaryLou; Berman, Pearl; Kleinberg, Sara; Shapiro, Harry; Volpe, L. Carl. Neuropsychology Laboratory, McLean Hospital, Belmont, MA 02178 **Amphetamine-induced stereotypy in the Mongolian gerbil (Meriones unguiculatus).** Behavioral Biology. 23(4):469-476, 1978.

Stereotypies induced in gerbils by large acute injections of amphetamine are described qualitatively and quantitatively. Interspecies comparisons were made with Swiss mice observed in the same apparatus scaled to size. The sterotypic behaviors emitted by the gerbils are similar to analogous behaviors in other species in being repetitive and compulsive units of motor behavior. The behaviors observed before injection were not predictive of the sterotypies induced by amphetamine. One consistent change in behavior following amphetamine was the change from normal social behavior to social stereotypy, suggesting that the gerbil, a very social animal may be useful for studying central mechanisms of social behavior. 14 references. (Author abstract modified)

000444 Cherfas, Jeremy Jon; Bateson, Patrick. Sub-Department of Animal Behaviour, University of Cambridge, Madingley, Cambridge, CB3 8AA, England **Colchicine impairs performance after learning a one-trial passive avoidance task in day-old chicks.** Behavioral Biology. 23(1):27-37, 1978.

To examine the effect of colchicine injection on performance after learning, successive discrimination tests were administered to day-old chicks who were injected pericardially with colchicine or saline and who were allowed to peck once at a red target coated with methyl anthranilate. The chicks injected with saline suppressed pecks to the red target compared to chicks given nonaversive training. The colchicine-injected chicks suppressed pecks to a significantly lower degree than saline-injected chicks. Caution is advised, however, before colchicine is accepted as a clean inhibitor of learning. 16 references. (Author abstract modified)

000445 Cherkin, Arthur; Van Harreveld, Anthonie. Psychobiology Research Laboratory, Veterans Administration Hospital, Sepulveda, CA 91343 **L-Proline and related compounds: correlation of structure, amnesic potency and anti-spreading depression potency.** Brain Research (Amsterdam). 156(2):265-273, 1978.

The effects of L-proline, D-proline, and L-azetidine-2-carboxylic acid (LA2C) on memory and on spreading depression in chicks were investigated. L-proline was more potent than either analogue in causing amnesia of one trial avoidance conditioning in 2-day-old chick and in preventing mechanically-induced spreading depression in the retina isolated from 2-3-week-old chicks. Results suggest that the L-configuration and the proper molecular size are essential for specificity is greater than that involved in protein synthesis, since LA2C is incorporated into protein in place of L-proline in several protein-synthesizing systems. 20 references. (Author abstract modified)

000446 Chu, H.; Klemp, A.; Stille, G. Institut fur Arzneimittel des Bundesgesundheitsamtes, Stauffenbergstr. 13, D-1000 Berlin 30, Germany **Effects of furosemide and spironolactone on the behavior of morphine-tolerant rats.** Psychopharmacology (Berlin). 59(3):309-310, 1978.

In morphine-tolerant female Wistar rats, a reappearance of morphine catalepsy and a disapppearance of the turning behavior characteristic of brain-lesioned tolerant animals were observed under the influence of furosemide and spironolactone. The administration of spironolactone together with daily morphine treatment resulted in an initial intensification of the morphine symptoms and a delayed appearance of tolerance, characterized by shift from catalepsy to turning movements in animals within unilateral brain lesions. Nontoxic doses of spironolactone raised the sensitivity of morphine tolerant rats, such that previously tolerated doses of morphine became lethal. 5 references. (Author abstract modified)

000447 Clark, Wesley G.; Lipton, J. M.; Said, Sami I. Department of Pharmacology, Southwestern Medical School, University of Texas Health Science Center, Dallas, TX 75235 **Hyperthermic responses to vasoactive intestinal polypeptide (VIP) injected into the third cerebral ventricle of cats.** Neuropharmacology (Oxford). 17(10):883-885, 1978.

Intracerebroventricular injections of 10-40mcg vasoactive intestinal polypeptide (VIP) in the cat elicited shivering and hyperthermic responses within 2-3 minutes, with recovery by 45 minutes. Previous studies showed that VIP occurs naturally in the hypothalamus, is localized in the synaptosomal fraction of hypothalamic tissues, and is released from hypothalamic tissues. Taken together, these findings suggest that VIP has a role in the central mediation of thermoregulation, possibly as a neurotransmitter or neuromodulator in heat production pathways. 13 references. (Author abstract modified)

000448 Colbern, Deborah L.; Isaacson, Robert L.; Green, Edward J.; Gispen, Willem H. Department of Psychology, University of Florida, Gainesville, FL 32611 **Repeated intraventricular injections of ACTH 1-24: the effects of home or novel environments on excessive grooming.** Behavioral Biology. 23(3):381-387, 1978.

The effects of repeated injections of adrenocorticotropic hormone (ACTH) 1-24 or saline on Wistar rat grooming behavior in home cages or novel environments were investigated. Animals treated with ACTH peptide evidenced an excessive, natural type grooming which did not differ in the two experimental situations. No sign of adaptation of the ACTH-induced grooming was found over 10 consecutive days of testing. Saline-treated animals evidenced more grooming in the novel experimental chambers than when observed in their home cages. Some suggestion of adaptation of the grooming response was found in the saline-treated animals tested in the novel chambers. The results suggest that ACTH 1-24 induces a specific grooming response that is not dependent on being tested in a novel environment. 12 references. (Author abstract modified)

000449 Collins, Barbara J.; Davis, John D. Department of Psychology, University of Illinois at Chicago Circle, Chicago, Il 60680 **Long term inhibition of intake by mannitol.** Physiology & Behavior. 21(6):957-965, 1978.

The addition of mannitol, a slightly sweet carbohydrate that retards absorption, to a palatable glucose/saccharin solution resulted in the retention of fluid in the intestine for up to 4 hours after the intake of fluid in a 15-minute drinking bout in male albino rats. When given access for 4 hours to glucose/saccharin solutions to which mannitol was added, intake was reduced in proportion to the concentration of mannitol (0, 0.05, 0.1, or 0.2M). Since rats with access to a 0.2M mannitol solution consumed most of their total intakes in the first 15 or 30 minute exposure, it was hypothesized that initial exposure to mannitol would suppress intake of a glucose/saccharin solution subsequently offered. Intake of the glucose/saccharin solution was diminished for only 1.5hours when rats were switched from a mannitol/glucose/saccharin solution, indicating that the effect of mannitol was mitigated but not abolished. The suppression of intake by mannitol does not appear to involve a conditioned taste aversion, but may activate a mechanism that is normally involved in limitation of meal size. 12 references. (Author abstract modified)

000450 Colpaert, F. C.; Niemegeers, C. J. E.; Janssen, P. A. J. Department of Pharmacology, Janssen Pharmaceutica Research Laboratories, B-2340 Beerse, Belgium **Studies on the regulation of sensitivity to the narcotic cue.** Neuropharmacology (Oxford). 17(9):705-713, 1978.

The possible development of tolerance to the physiological actions underlying the discriminative stimulus properties of narcotic analgesic drugs was investigated in male Wistar rats. In rats given daily noncontingent exposure to 0.06mg/kg fentanyl for 30 days before they were trained to discriminate 0.04mg/kg fentanyl from saline, the omission error rate was decreased, there was no increase in the number of sessions to criterion, and sensitivity to the narcotic cue was unaffected, compared to control rats. In animals with a long history of narcotic treatment, noncontingent exposure to increasing doses (0.06-0.16mg/kg) of fentanyl in addition to regular contingent exposure produced no increase in omission error rate or decrease in sensitivity. It is concluded that the tolerance hypothesis is inadequate to account for these data. It is suggested that the organism actively regulates its sensitivity to the physiological actions of narcotics and that their biological significance presents a major source of feedback in this regulation. 52 references. (Author abstract modified)

000451 Colpaert, Francis C.; Niemegeers, Carlos J. E.; Janssen, Paul A. J.; Van Ree, Jan M.; De Wied, David. Department of Pharmacology, Jannsen Pharmaceutica Research Laboratories, B-2340 Beerse, Belgium **Selective interference of ACTH4-10 with discriminative responding based on the narcotic cue.** Psychoneuroendocrinology (Oxford). 3(2):203-210, 1978.

In male Wistar rats trained to discriminate 0.04mg/kg fentanyl from saline in a two-lever, food-rewarded, discrete trial operant procedure, the peptide fragment 4-10 of adrenocorticotropic hormone (ACTH4-10) induced transient responding appropriate to the saline condition after fentanyl injection. The effect was selective, since the induction of omission errors was not accompanied by an increase incidence of commission errors. ACTH4-10 also caused upward and downward shifts in the empirical sensitivity of trained rats to the cuing effects of fentanyl. It is suggested that ACTH4-10 may interfere with attentional mechanisms involved in both the receptivity to and the selection of sensory input (sensory gating). 24 references. (Author abstract modified)

000452 Cools, A. R. Department of Pharmacology, University of Nijmegen, Geert Grooteplein N 21, Nijmegen. The Netherlands **Ergometrine and its biphasic action at dopaminergic receptors in the nucleus accumbens of rats.** Pharmacology (Basel). 16(Suppl. 1):93-98, 1978.

The biphasic effect of ergometrine at the dopaminergic receptors in the nucleus accumbens of rats was investigated. Bilateral administration of ergometrine into rats pretreated 40 minutes earlier with apomorphine (0.9mg/kg, s.c.)resulted in a shift from a predominant licking score to a predominant gnawing score. Bilateral administration of ergometrine or (3,4-dihydroxyphenylamino)-2-imidazoline into the brain of rats treated 20 minutes later with apomorphine (2.0mg/kg, s.c.)resulted in a shift from a predominant licking and gnawing score to a predominant walking and sniffing score. These and related data suggest a biphasic action at a certain group of dopamine receptors within the nucleus accumbens of rats: a short-term activation and a long-term inhibition following this initial activation. The predictive value of the behavioral profile triggered by ergometrine for the evaluation of antidepressant effects of centrally-acting drugs is discussed. 20 references. (Author abstract)

000453 Cools, Alexander R.; van Dongen, Paul A. M.; Janssen, Hendrik-Jan; Megens, Anton A. P. H. Department of Pharmacology, University of Nijmegen, Geert Grooteplein N 21, Nijmegen, The Netherlands **Functional antagonism between dopamine and noradrenaline within the caudate nucleus of cats: a phenomenon of rhythmically changing susceptibility.** Psychopharmacology (Berlin). 59(3);231-242, 1978.

Seasonal variation in the functional interaction of noradrenaline (NE) and dopamine (DA) was investigated in freely-moving cats. Behavioral effects produced by administration of NE and oxymetazoline into the caudate nucleus differed from those produced by DA or (3,4-dihydroxyphenylamino)-2-imidazoline (DPI). NE-dependent effects were antagonized by phentolamine, and DA or DPI-induced effect were antagonized by ergometrine. Ergometrine, NE, and oxymetazoline were effective in November, December, and January; lost their effectiveness in March, April, and May; regained effectiveness in July; and lost it again in August, September, and October. DA, DPI, and phentolamine showed an opposite annual pattern of effectiveness. DA agonists suppressed NE or oxymetazoline-induced effects, while DA antagonists supressed phentolamine effects under certain circumstances. It is concluded that NE dependent processes within the feline caudate nucleus inhibit DA-dependent processes within this structure, and that the functional antagonism of the two transmitters shows rhythmically changing susceptibility. 70 references. (Author abstract modified)

000454 Cooper, S. J.; Sweeney, K. F. Department of Psychology, Queen's University of Belfast, Belfast, BT7 1NN, Northern Ireland **Food-intake and locomotor activity: effects of mazindol**

and spiperone. British Journal of Pharmacology (London). 63(2):412-413, 1978.

In a paper presented at the January 1978 meeting of the British Pharmacological Society in Middlesex, England, the effects of mazindol and spiperone on food intake and locomotor activity in male Lister rats were reported. In animals adapted over a 3-week period to consuming their daily food intake in a 4-hour period, mazindol (2.5mg/kg) markedly reduced food intake in the first hour but not in the subsequent 3 hours. Spiperone (0.1mg/kg) significantly attenuated the mazindol-induced anorexia in the first hour of the test, but had no effect on food intake in the remainder of the test. In open field tests, spiperone (0.1mg/kg) produced a marked deficit in locomotor activity, while mazindol (2.5mg/kg) increased activity. At a lower dose (0.03mg/kg), spiperone attenuated mazindol-induced anorexia, but did not, when given alone, reduce food intake or depress locomotor activity. It is concluded that spiperone can antagonize drug-induced anorexia via a mechanism distinct from the nonspecific depression of behavioral responses. 3 references. (Author abstract modified)

000455 Costall, B.; Hui, S.-C. G.; Naylor, R. J. Postgraduate School of Studies in Pharmacology, University of Bradford, Bradford, BD7 1DP, England **Correlation between multitest and single test catalepsy assessment.** Neuropharmacology (Oxford). 17(9):761-764, 1978.

In tests of catalepsy induced by haloperidol or fluphenazine in male Sprague-Dawley rats, there was no difference in the intensity of catalepsy between animals tested frequently and those tested only on one occasion. No marked differences between results obtained using a scoring system or the actual times of cataleptic intensity were observed, except that the time limitations of the scoring system reduced the testing time at larger doses. Catalepsy increased in intensity with time following drug administration to a maximum that was maintained for the duration of the drug effect, independent of the number of times the animals were tested. 8 references. (Author abstract modified)

000456 Costall, B.; Naylor, R. J.; Nohria, V.; Owen, R. T. Postgraduate School of Studies in Pharmacology, University of Bradford, Bradford, England **Changes in dopamine-dependent motor behaviour caused by propranolol and its isomers.** Journal of Pharmacy and Pharmacology (London). 30(10):657-660, 1978.

The neuropharmacological profiles of propranolol and its isomers were examined, using animal models of enhanced dopaminergic activity. Propranolol reduced or abolished the hyperactivity induced in rats by injection of dopamine into the nucleus accumbens; ()-propranolol had the greatest antagonist activity and (-)-propranolol the least. Climbing activity induced in mice by apomorphine was also antagonized by propranolol; in this model, ()-propranolol was the most potent antagonist, (-)-propranolol the least potent, and racemic propranolol again had an intermediate effect. Dyskinesias induced in the guinea-pig by dopamine or 1-amino-1,2,3,4-tetrahydronaphthalene were not antagonized by propranolol in any isomeric forms. Implications of these findings for the clinical use of propranolol in schizophrenia and other mental disorders are discussed. 23 references.

000457 Costall, B.; Naylor, R. J.; Nohria, V. Postgraduate School of Studies in Pharmacology, University of Bradford, Bradford BD7 1DP, England **Differential actions of typical and atypical neuroleptic agents on two behavioural effects of apomorphine in the mouse.** British Journal of Pharmacology (London). 63(2):381-382, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society in Guildford, England, differential actions of typical and atypical neuroleptic agents on two behavioral effects of apomorphine in mice were reported. Apomorphine induced circling behavior in mice with unilateral lesions of the caudate/putamen was antagonized by the typical neuroleptic, haloperidol, in a dose-dependent manner, but was not antagonized by the atypical neuroleptic, sulpiride. Apomorphine-induced climbing behavior in normal mice was inhibited in a dose dependent fashion, by haloperidol and by sulpiride. Results suggest that circling behavior may be dependent on striatal changes, while climbing behavior may involve a different type of apomorphine sensitive structure within the striatum or mesolimbic area. It is concluded that climbing behavior is a more suitable model then circling behavior for detecting the different types of clinically-active antischizophrenic agents. 4 references. (Author abstract modified)

000458 Costall, Brenda; Naylor, Robert J.; Owen, Richard T. Postgraduate School of Studies in Pharmacology, University of Bradford, Bradford, BD7 1DP, England **Differential interactions of picrotoxin with the biting behaviour caused by 2-(N,N-dipropyl)amino 5,6-dihydroxytetralin and apomorphine in the guinea pig: a study of the mechanisms involved.** European Journal of Pharmacology (Amsterdam). 50(2):113-118, 1978.

Subcutaneous administration of 2-(N,N-dipropyl)amino 5,6-dihydroxytetralin (0.025-0.05mg/kg) or apomorphine (0.25-1.0mg/kg) caused dose-dependent biting behavior in Dunkin-Hartley/Lac guinea-pigs. Bilateral intrastriatal administration of picrotoxin alone (0.625-5mcg/mcl) did not cause biting, but intrastriatal picrotoxin combined with subthreshold doses of the 2-aminotetralin did produce dose-dependent biting responses. Similar combinations of picrotoxin and apomorphine failed to elicit biting. The continuous biting behavior induced in all animals by subthreshold doses of picrotoxin (0.625mcg) and the 2-aminotetralin compound (0.0125mg/kg) was not antagonized by bilateral intrastriatal injections of procaine, noradrenaline, or dopamine, but was antagonized by serotonin, gamma-aminobutyric acid (GABA), and the cholinergic agonist RS86. Peripheral administration of an anticholinergic agent (dexetimide, 0.625-2.5mg/kg) and an antiserotonergic agent (cyproheptadine, 1.25-5.0mg/kg) enhanced biting induced by a combination of 1.25mcg intrastriatal picrotoxin and 0.006mg/kg subcutaneous aminotetralin. Biting was not enhanced by the alpha-adrenergic and beta-adrenergic blocking agents, aceperone and dl-propranolol. Results indicate that a complex of interactions between GABA, serotonin, and acetylcholine are involved in the mediation of abnormal perioral effects induced by the 2-aminotetralin compound. 9 references. (Author abstract modified)

000459 Costall, Brenda; Naylor, Robert J.; Nohria, Virinder. Postgraduate School of Studies in Pharmacology, University of Bradford, Bradford, England **Climbing behaviour induced by apomorphine in mice: a potential model for the detection of neuroleptic activity.** European Journal of Pharmacology (Amsterdam). 50(1):39-50, 1978.

Apomorphine and the putative dopamine agonist 2-(N,N-dipropyl)-amino-5,6-dihydroxytetralin induced dose-dependent climbing behavior in male BKW albino mice. Climbing behavior induced by 1.0mg/kg subcutaneous apomorphine was antagonized in a dose-dependent fashion by low doses of typical and atypical neuroleptic agents (haloperidol, fluphenazine, loxapine, pimozide, oxiperomide, clozapine, thioridazine, sulpiride, tiapride, and metoclopramide), but not specifically by other psychoactive agents. Climbing behavior was modified by serotonergic agents; the agonist quipazine reduced or abolished the response, and the antagonists methysergide and cyproheptadine enhanced it. Picrotoxin specifically reduced climbing behavior, but sodium valproate exerted nonspecific effects. Atropine, aceperone, piperoxan, and propranolol were without effect, indicating that cholinergic and noradrenergic mechanisms are not

likely involved in climbing. The antagonistic effects of typical neuroleptics (haloperidol, fluphenazine, and loxapine) were markedly enhanced by combination with methysergide or cyproheptadine, while the effects of clozapine, sulpiride, and thioridazine were significantly reduced. It is suggested that the mouse climbing model provides a useful test for screening antipsychotic agents of different activity spectra. 21 references. (Author abstract modified)

000460 Cross, A. J.; Longden, A.; Owen, F.; Poulter, M.; Waddington, J. L. Division of Psychiatry, Clinical Research Centre, Watford Road, Harrow HA1 3UJ, England **Inter-relationships between behavioral and neurochemical indices of supersensitivity in dopaminergic neurones.** British Journal of Pharmacology (London). 63(2):383, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society in Guildford, England, interrelationships between behavioral and neurochemical indices of supersensitivity in dopaminergic neurons were described. In rats lesioned unilaterally in the medial forebrain bundle with 6-hydroxydopamine, there was a strong correlation between the degree of dopamine (DA) depletion and the amount of apomorphine-induced turning. DA depletion below 60% did not produce a rotational response. DA receptor sensitivity, assessed by (3H) spiperone binding, was elevated by 42% in striatal preparation after nigrostriatal lesions with a significant correlation between increases in spiperone binding and apomorphine-induced turning. There was no significant correlation between adenylate cyclase activity and DA depletion, spiperone binding, or rotational response to apomorphine. 5 references. (Author abstract modified)

000461 Crossman, A. R.; Sambrook, M. A. Dept. of Anatomy, Medical School, University of Manchester, Manchester M13 9PT, England **Experimental torticollis in the monkey produced by unilateral 6-hydroxydopamine brain lesions.** Brain Research (Amsterdam). 149(2):498-502, 1978.

The production of severe experimental torticollis in the marmoset monkey via a selective chemical lesion aimed at the dopaminergic fibers which project from the midbrain tegmentum to the ipsilateral striatum was demonstrated via injection of 6-hydroxydopamine (6-OHDA) into the lateral hypothalamus, through which the ascending dopaminergic fibers are known to pass. The torticollis thus produced appears to be due to interruption of ascending dopaminergic fibers, since the head turning is aggravated by amphetamine and abolished or reversed by apomorphine. Although noradrenergic neurons may also be destroyed by 6-OHDA, the observed phenomena do not appear to be primarily due to noradrenergic involvement. 3 references.

000462 Dalterio, Susan Linda Skowron. Tufts University **Effects of cannabinoids on male reproductive function in mice. (Ph.D. dissertation).** Dissertation Abstracts International. 39(3):1534-B, 1978. Ann Arbor, Univ. Microfilms No. 7815920. 132 p., 1978.

The effects of delta9-tetrahydrocannabinol (THC), the main psychoactive ingredient in marihuana, on several indices of male mouse reproductive function were compared with the effects of cannabinol (CBN), a nonpsychoactive component of the drug. Administration of a single oral dose of 50mg THC/kg bodyweight to either prepubertal or adult male Ss resulted in a significant reduction in plasma testosterone (T), luteinizing hormone (LH), and follicle stimulating hormone (FSH) levels, as well as a decrease in level of copulatory activity in adults. Equivalent doses of CBN did not affect these parameters. Chronic treatment with THC or CBN significnatly decreased sexual behavior in adults. Findings indicate that both the psychoactive and nonpsychoactive constituents of marihuana depress testicular function and sexual behavior in adult males, and that changes in mating behavior may be secondary to a reduction in peripheral T concentration. It was found that treatment of pregnant and lactating females with cannabinoids can alter the function of the hypothalamo-pituitary-gonadal axis in their male offspring during the perinatal critical period of sexual differentiation. This leads to permanent changes in responsivity to exteroceptive stimuli from conspecifics, bodyweight regulation, sexual behavior, and pituitary-testicular function. (Journal abstract modified)

000463 Dantzer, Robert. I. N. R. A., Station de Pharmacologie-Toxicologie, 180, chemin de Tournefeuille, F-31300 Toulouse, France **Antipunishment effects of Diazepam: interaction with shock and food deprivation levels in pigs.** Psychopharmacology (Berlin). 58(1):99-104, 1978.

The effects of 1mg/kg diazepam on punished behavior of pigs were investigated under various degrees of food deprivation and/or shock level. Responses emitted during the punishment signal were affected more by the shock level than by the degree of food deprivation; while nonpunished response rates were modified by neither factor. Diazepam treatment increased the number of responses emitted during the punishment signal but interacted with the shock intensity; drug effects were attenuated when the shock intensity was severe, in spite of an equivalent control baseline. In separate experiments, diazepam also increased the overall rate of nonpunished responding but had no consistent effect on flinch and escape thresholds. The effects of diazepam on punished responding do not appear to be related to eventual changes in food motivation or sensitivity to electric shock. 23 references. (Author abstract modified)

000464 Dantzer, Robert. INRA, Station de Pharmacologie, 180, chemin de Tournefeuille F-31300 Toulouse, France **Dissociation between suppressive and facilitating effects of aversive stimuli on behavior by benzodiazepines. A review and reinterpretation.** Progress in Neuro-Psychopharmacology. 2(1):33-40, 1978.

The relation of the behavioral effects of benzodiazepines to their clinical effects is discussed. Evidence showing that benzodiazepine derivatives release behavior that has been suppressed by punishment or nonreinforcement but do not prevent facilitating effects of aversive events on behavior is reviewed. It is suggested that the behavioral changes observed after benzodiazepine treatment are due to a response perseverance effect that can be traced to a selective interference of the drugs with the mechanisms controlling response associated cues. 42 references. (Author abstract modified)

000465 Davies, J. A. Department Materia Medica and Pharmacology, Welsh National School of Medicine, Heath Park, Cardiff DF4 4XN, Wales **The effect of gamma-butyrolactone on locomotor activity in the rat.** Psychopharmacology (Berlin). 60(1):67-72, 1978.

The effect of gamma-butyrolactone (GBL) on locomotor activity was investigated in female Wistar rats. Low doses of GBL (100 and 200mg/kg) produced an initial reduction of activity, followed by a period of hyperactivity. Benzotropine potentiated the GBL-induced hyperactivity, while alpha-flupenthixol reduced it. Atropine, clomipramine, and protriptyline had little effect on the biphasic GBL effect. It is concluded that the increase in activity induced by GBL could be due to a release of dopamine. 14 references. (Author abstract modified)

000466 Davis, G. A.; Kohl, R. L. Wisconsin Regional Primate Research Center, 1223 Capitol Court, Madison, WI 53706 **Biphasic effects of the antiserotonergic methysergide on lordosis in**

rats. Pharmacology Biochemistry and Behavior. 9(4):487-491, 1978.

The antiserotonergic drug methysergide facilitated lordotic responding in estrogen-primed, ovariectomized rats. A second dose of methysergide 24 hours after the first, however, failed to produce any increment in responding. Progesterone facilitated lordosis to the same degree in animals given methysergide for several days as in controls given only saline and estrogen. When a second injection of progesterone was given 24 hours later, however, the methysergide-treated animals failed to respond; saline controls responded equally well to both progesterone injections. Results are discussed in terms of possible serotonergic and nonserotonergic mechanisms by which progesterone may control lordosis. 21 references. (Author abstract modified)

000467 Davis, Kenneth L.; Hollister, Leo E.; Vento, Adela L.; Simonton, Susan. Veterans Administration Hospital, Palo Alto, CA 94304 **Choline chloride in methylphenidate- and apomorphine-induced stereotypy.** Life Sciences. 22(24):2171-2178, 1978.

The effects of choline chloride on apomorphine and methylphenidate-induced stereotypy were examined in male Sprague-Dawley rats. Subcutaneous administration of a single dose of choline chloride (79mg) significantly reduced apomorphine-induced stereotypy. These results could not be attributed to a nonspecific obtunding effect of choline chloride and indicate that choline chloride may increase central cholinergic activity. However, neither acute nor chronic oral administration of choline chloride reversed apomorphine or methylphenidate-induced stereotypy. 17 references. (Author abstract)

000468 Deutsch, J. A.; Gonzalez, Manuel F. Department of Psychology, University of California, San Diego, La Jolla, CA 92093 **Food intake reduction: satiation or aversion?** Behavioral Biology. 24(3):317-326, 1978.

Intraperitoneal injections of a wide range of doses of lithium chloride (LiCl) were given to one group of Long-Evans rats to measure the effect of the drug on the eating behavior of the animals, and to a second group to test whether the rats had learned a taste aversion to flavored fluids that had been paired with the LiCl injections. The administration of doses of LiCl that produced reductions in eating in the order of 50% did not produce learned taste aversion. These results indicate that a decrease in food intake is a more sensitive test of malaise than the learning of a taste aversion. It is suggested, therefore, that the taste aversion test to rule out malaise as a possible explanation of reductions in eating in satiation research should be used with reservations. 27 references. (Author abstract modified)

000469 Diaz, Jaime; Schain, Richard J. Department of Psychiatry, University of California, Los Angeles, CA 90024 **Phenobarbital: effects of long-term administration on behavior and brain of artificially reared rats.** Science. 199(4324):90-91, 1978.

The developmental effects of phenobarbital administered chronically during infancy to artificially-reared rats were examined. Two doses of phenobarbital were given daily for 2 weeks to infant rats fed by intragastric cannulas. The larger dose (60 milligrams per kilogram of bodyweight) resulted in decreased spontaneous activity and increased responses to novel stimuli. The smaller dose (15 milligrams per kilogram of body weight) resulted in increased spontaneous activity and also an increase of responses to novel stimuli. The larger dose produced a 12% reduction in brain growth, while the smaller dose was associated with a 3% reduction in brain growth. The implications of this research for human infants are discussed. 12 references. (Author abstract modified)

000470 dKastin, Abba J.; Scollan, Elizabeth L.; Ehrensing, Rudolph H.; Schally, Andrew V.; Coy, David H. Endocrinology Section of the Medical Service, V.A. Hospital, 1601 Perdido Street, New Orleans, LA 70146 **Enkephalin and other peptides reduce passiveness.** Pharmacology Biochemistry and Behavior. 9(4):515-519, 1978.

The activity of naturally-occurring peptides and their analogues was studied in an animal model of depression. Several enkephalins with no opiate activity after peripheral administration reduced immobility and increased swimming in male rats. Alpha-melanocyte stimulating hormone (MSH), but not its 4-10 core or a 4-9 analogue, also significantly increased swimming. A smaller dose of MSH releasing factor 1 was more effective than larger doses. Results suggest that brain peptides may be useful in treating mental depression and other CNS disorders. 21 references. (Author abstract modified)

000471 Drewnowski, Adam; Grinker, Joel A. Psychology Department, University of Toronto, Toronto, Canada **Temporal effects of delta9-tetrahydrocannabinol on feeding patterns and activity of obese and lean Zucker rats.** Behavioral Biology. 23(1):112-117, 1978.

Food intake and activity of Zucker obese and lean rats were monitored by on-line computer for 24 hr periods. Delta9-tetrahydrocannabinol (THC) failed to reduce intake during the first 3 hr postinjection and shifted the feeding pattern towards more, smaller meals. Subsequent reduction in food intake was associated with a suppression of running wheel activity. It is concluded that these data are inconsistent with the currently-held models of anorexia and suggest that delta9-THC may suppress feeding by indirect means. 22 references. (Author abstract)

000472 Dykstra, Linda A.; Leander, J. David. Department of Psychology, University of North Carolina, Chapel Hill, NC 27514 **Electric shock titration: effects of meperidine, anileridine and alphaprodine.** Pharmacology Biochemistry and Behavior. 8(4):387-389, 1978.

The effects of meperidine, anileridine, and alphaprodine were studied in squirrel monkeys whose behavior was maintained under a 2.0sec schedule of shock increment. Low doses of all three drugs had no effect, whereas higher doses (above 1mg/kg) decreased responding at the zero shock intensity. Slightly higher doses of meperidine and anileridine increased responding at the zero shock intensity and produced convulsions. 13 references. (Author abstract)

000473 Engler, E.; Matthias, D.; Becker, C. H.; Herrmann, H. J. Wiltbergstrasse, 50, DDR-1115 Berlin, German Democratic Republic **The stimulating influence of the experimental procedure on several somatic reactions in animal experiments.** Activitas Nervosa Superior (Praha). 20(1):17-19, 1978.

In a paper read at the 13th Interdisciplinary Conference of Experimental and Clinical Study of Higher Nervous Functions, held at Piestany, Czechoslovakia during October 1976, the stimulating influence of the experimental procedure on several somatic reactions in animal experiments is discussed. The effect of gradual training in the experimental procedure on various clinical, biochemical, and morphological variables of 105 male rats was studied during administration of exogenous angiotensin-II. Adaptation to the experimental procedure and consequently to the altered starting situation of the organism was found to have a considerable influence on the course of the experiment, prematurely (relative to control animals) activating the cardiovascular regulatory system. 7 references.

000474 Epstein, Paul N.; Altshuler, Harold L. Department of Neuropsychopharmacology, Texas Research Institute of Mental

Science, Houston, TX 77030 **Changes in the effects of cocaine during chronic treatment.** Research Communications in Chemical Pathology and Pharmacology. 22(1):93-105, 1978.

Changes in the male Sprague-Dawley rat's response to cocaine were examined during chronic administration of the drug. Doses of 20 and 35mg/kg were administered at intervals of 12 and 24 hours for 300 days or until their effects proved fatal. Sensitization to cocaine's convulsant and behavioral activating properties, tolerance to its weight loss effects, and decreased response duration were observed with chronic drug administration. Convulsant sensitization occurred primarily in rats receiving the higher dose of cocaine, while all other effects occurred with equal frequency in the two dose groups. None of the changes were dependent on the interval between injections. 14 references. (Author abstract modified)

000475 Erickson, Carlton K.; Tyler, Thomas D.; Harris, R. Adron. College of Pharmacy, University of Texas, Austin, TX 78712 **Ethanol: modification of acute intoxication by divalent cations.** Science. 199(4334):1219-1221, 1978.

Calcium, other divalent cations, and calcium antagonists were tested for their ability to alter ethanol-induced sleeping time, hypothermia, and behavioral intoxication in rats and mice. Calcium given intraventricularly significantly enhanced sleeping time and behavioral intoxication in a dose-related manner. The ionophores X537A and A23187 accentuated the effect of a low dose of calcium, whereas the calcium chelators ethylenediaminetetraacetic acid (EDTA) and (ethylenebis(oxyethylenenitrilo))tetraacetic acid (EGTA) decreased sleeping time. Calcium also enhanced tertiary butanol and chloral hydrate induced sleeping time. The effects of cations on ethanol-induced hypothermia were less significant. Results suggest the existence of a central calcium pool involved in ethanol intoxication in rodents and indicate that cations can alter the effects of centrally depressant drugs in general and of ethanol in particular. Findings are also discussed in relation to previous research on morphine effects on brain calcium. 31 references. (Author abstract modified)

000476 Esposito, Ralph U.; Motola, Allen H. D.; Kornetsky, Conan. Behavioral Pharmacology Laboratory, Boston University School of Medicine, 80 E. Concord Street, Boston, MA 02118 **Cocaine: acute effects on reinforcement thresholds for self-stimulation behavior to the medial forebrain bundle.** Pharmacology Biochemistry and Behavior. 8(4):437-439, 1978.

The acute effects of various doses of cocaine on a rate-free threshold determination for intracranial self-stimulation (ICSS) behavior to the medial forebrain bundle lateral hypothalamic area in rats were studied. Reinforcing thresholds for ICSS were determined by a rate-free psychophysical method. Acute administration of cocaine lowered the reinforcing thresholds independent of motor stimulatory effects. The results indicate that cocaine affects the sensitivity of the reward pathways in the brain, and further demonstrate the utility of rate independent methods in the assessment of drug effects on self-stimulation behavior. 13 references. (Author abstract modified)

000477 Esposito, Ralph Umberto. Boston University Graduate School **Effects of morphine on the reward systems in the brain. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 78-8020, HC$15. MF$7.50. 116 p. 1978.

The acute and long-term effects on morphine of self-stimulation behavior to various catecholamine-rich sites in the brain were investigated. Four rats were implanted with electrodes in the medial forebrain bundle lateral hypothalamic area, three with electrodes in the ventral tegmental area, and three with electrodes in the locus coeruleus. After changes in their threshold in response to saline injections stabilized, the effect of various doses of morphine on the thresholds was investigated, after which the animals were made tolerant to the drug by being given gradually increasing amounts of morphine administered 15 minutes after each daily testing session. After a period of chronic drug administration ranging from 2 to 5 weeks, the effects of various doses of morphine on the threshold values were reexamined. Low to moderate doses of up to 16mg/kg tended to produce increases in the threshold with the animals manifesting some degree of apparent sedation. Tolerance developed to the presumed sedative effects of the higher doses so that they also eventually produced significant threshold reductions. The data demonstrate that morphine will enhance self-stimulation behavior to these catecholamine rich sites and that tolerance to this particular opiate effect, if it develops at all, is remarkably slow to develop. (Journal abstract modified)

000478 Fibiger, Hans C.; Mason, Stephen T. Division of Neurological Sciences, Department of Psychiatry, University of British Columbia, Vancouver, BC V6T 1W5, Canada **The effects of dorsal bundle injections of 6-hydroxydopamine on avoidance responding in rats.** British Journal of Pharmacology (London). 64(4):601-605, 1978.

The effects of injection of 6-hydroxydopamine (6-OHDA) into the fibers of the dorsal noradrenergic bundle on acquisition, retention, and extinction of active avoidance were investigated in male Woodlyn rats. The 6-OHDA injections severely depleted noradrenaline in all forebrain areas assayed except the septum. No significant effect on dopamine concentrations in the forebrain was found. Acquisition and retention of active avoidance were not altered by the 6-OHDA lesions, but marked resistance to extinction was observed when the unconditioned stimulus (shock) was removed. Taken together with previous studies in which both noradrenaline and dopamine in the forebrain were depleted, these findings suggest that the alteration in extinction is a noradrenergic effect, whereas previously reported deficits in acquisition and retention are dopaminergic in origin. 28 references. (Author abstract modified)

000479 Finkelberg, Fred; Kalant, Harold; Le Blanc, A. Eugene. Department of Pharmacology, University of Toronto, Toronto, Ontario, Canada M5S 1A8 **Effect of vasopressin-like peptides on consumption of ethanol by the rat.** Pharmacology Biochemistry and Behavior. 9(4):453-458, 1978.

The effects of desglycinamide9-lysine8-vasopressin (DGLVP) on the acquisition and retention of alcohol-drinking behavior (ADB) were investigated in Sprague-Dawley rats. The animals were trained to accept ethanol in their drinking water by successive small increments or decrements in alcohol concentration in response to the individual consumption of each rat. Rats injected with DGLVP (1-4mcg) subcutaneously every second day attained almost final acceptance concentrations and mean daily ethanol intakes (g/kg) nearly twice as high as those of vehicle treated controls. Hypophysectomized rats initially accepted the same alcohol concentrations as intact rats, but drank much larger volumes and had correspondingly higher intakes. However, this was rapidly succeeded by a rejection of all but very low concentrations. During a subsequent free choice period, the groups maintained their relative positions with respect to ethanol intake. This was not altered by injection of vasopressin in the hypophysectomized rats but was overcome by raising the alcohol concentration. Results suggest that vasopressin-like peptides facilitates acquisition of ADB. 34 references. (Author abstract modified)

000480 Fitzsimons, J. T.; Evered, M. D. Physiological Laboratory, University of Cambridge, Cambridge, CB2 3EG, England

Eledoisin, substance P and related peptides: intracranial dipsogens in the pigeon and antidipsogens in the rat. Brain Research (Amsterdam). 150(3):533-542, 1978.

In a study of intracranial dipsogens in the pigeon and antidipsogens in the rat, it is reported that the undecapeptide eledoisin caused vigorous and copious drinking within a minute or two of injection into the pigeon forebrain. Systemic injections of the same doses were ineffective. The relative efficacy of eledoisin and angiotensin-II as dipsogens in the pigeon was similar to that of carbachol and angiotensin-II in the rat. The related peptides eledoisin hexapeptide, physalemin, and substance P also caused some drinking, but they were less effective than eledoisin. In the rat none of these substances caused drinking. On the contrary, eledoisin and substance P were found to depress angiotensin-induced drinking, but carbachol-induced drinking was not depressed to the same extent by these peptides. The preferential depression of angiotensin-II-induced drinking resembles the effects of other vasoplegic drugs on this response in the rat, and may be related to the potent vasodilator properties of these peptides. 15 references. (Author abstract)

000481 Fleming, Alison S. University of Toronto, Erindale College, Mississauga, Ontario L5L 1C6, Canada **Food intake and body weight regulation during the reproductive cycle of the golden hamster (Mesocricetus auratus).** Behavioral Biology. 24(3):291-306, 1978.

Changes in food intake and bodyweight of hamsters were traced over the estrous cycle, pregnancy, lactation, and the postsuckling period. Food intake varied with estrous cycle but did not increase during pregnancy. During the postpartum period food intake increased in proportion to litter size, and bodyweight decreased. The postsuckling period was accompanied by a decrease in food intake and an increase in bodyweight. Prolactin injections did not maintain the elevated food intake during the postsuckling period, nor did they stimulate food intake when administered for a 7 day period to virgin animals. The mechanisms and functional implications of the contrasting patterns of energy regulation in hamsters and rats are discussed. 37 references. (Author abstract)

000482 Foreman, M. M.; Moss, R. L. Department of Obstetrics and Gynecology, University of Texas Health Science Center, Dallas, TX 75235 **Role of hypothalamic alpha and beta adrenergic receptors in the control of lordotic behavior in the ovariectomized-estrogen primed rat.** Pharmacology Biochemistry and Behavior. 9(2):235-241, 1978.

The role of hypothalamic alpha-adrenergic and beta-adrenergic receptors in the control of lordotic behavior was studied in female Wistar rats. The infusion of the alpha-receptor blockers phentolamine and phenoxybenzamine, the beta receptor stimulant isoproterenol, dopamine, norepinephrine, or epinephrine into the medial preoptic area (MPOA) or arcuate/ventromedial area (ARC-VM) produced increases in lordotic behavior in ovariectomized (OVX) rats primed with low doses of estrone (100-250mcg). MPOA or ARC-VM infusions of the alpha-receptor stimulant methoxamine or the beta-receptor blocker propranolol produced decreases in lordotic behavior. Infusions of these agents into the lateral hypothalamic area had no effect on sexual receptivity. When OVX rats were primed with higher doses of estrone, methoxamine and propranolol infusions into the MPOA or ARC-VM depressed lordotic response, but alpha-receptor blockade and beta-receptor stimulation did not further enhance the near maximal lordotic response. Infusions of luteinizing hormone releasing hormone (LRH) into the MPOA or ARC-VM significantly enhanced lordotic behavior, but addition of methoxamine or propranolol to the LRH infusates abolished this response. Alternative mechanisms are proposed for the roles of alpha-adrenergic and beta-adrenergic receptors in the hypothalamic control of estrogen-induced and LRH-facilitated lordotic behavior. 36 references. (Author abstract modified)

000483 Fozard, J. R.; Palfreyman, M. G. Centre de Recherche Merrell International, 16, rue d'Ankara, JF-67084 Strasbourg, France **Metoclopramide antagonism of 5-hydroxytryptophan-induced 'wet-dog' shake behaviour in the rat.** British Journal of Pharmacology (London). 63(2):387-388, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society in Guildford, England, metoclopramide antagonism of 5-hydroxytryptophan (5-HTP) induced wet-dog shake behavior (WDS) was reported. Male Sprague-Dawley rats were injected intraperitoneally with saline, carbidopa, or carbidopa plus methysergide or metoclopramide 30 minutes prior to administration of 5-HTP. Methysergide reduced WDS in a dose-related manner, but only a very large dose of metoclopramide inhibited WDS. Inhibition of WDS by metoclopramide, but not methysergide, was associated with a blockade of the rise in brain 5-hydroxytryptamine (5-HT) after carbidopa plus 5-HTP or 5-HTP alone. These results point to a postsynaptic site of action for methysergide as a blocker of WDS, whereas inhibition of WDS by metoclopramide may result from prevention of the 5-HTP-induced rise in brain 5-HT concentrations. 4 references. (Author abstract modified)

000484 Fregly, Melvin J.; Thrasher, Terry N. Department of Physiology, University of Florida, College of Medicine, Gainesville, FL 32610 **Attenuation of angiotensin-induced water intake in estrogen-treated rats.** Pharmacology Biochemistry and Behavior. 9(4):509-514, 1978.

Chronic treatment with either estradiol benzoate (31 and 57mcg/kg/day) or ethynyl estradiol (30 and 72mcg/kg/day) attenuated the drinking responses of female Sprague-Dawley rats to acute administration of isoproterenol (25mcg/kg) or synthetic angiotensin-II (100 and 200mcg/kg). These findings suggest that attenuation of isoproterenol-induced drinking in estrogen-treated rats may be associated with reduced responsiveness to angiotensin-II. This may be related to reduced permability of angiotensin-II at the level of the circumventricular organs of the brain, to hyporesponsiveness of central receptors for angiotensin-II mediating thirst, or to mechanisms beyond the receptor that are responsible for the conscious behavioral changes that normally accompany angiotensin-II-induced thirst. 25 references. (Author abstract modified)

000485 Garcia-Sevilla, J. A.; Ahtee, Liisa; Magnusson, T.; Carlsson, A. Department of Pharmacology, University of Goteborg, Goteborg, Sweden **Opiate-receptor mediated changes in monoamine synthesis in rat brain.** Journal of Pharmacy and Pharmacology (London). 30(10):613-621, 1978.

The effects of morphine, beta-endorphin, naloxone, and naltrexone on the rate of tyrosine and tryptophan hydroxylation were investigated in vivo by measuring the accumulation of dopa and 5-hydroxytryptophan (5-HTP) in different brain regions of male Sprague-Dawley rats after inhibition of the aromatic L-amino acid decarboxylase. Morphine (3-30mg/kg ip) increased the accumulation of dopa (25-50%) in a dose-dependent fashion in the dopamine rich brain areas (limbic forebrain and corpus striatum), but only the highest dose significantly increased dopa formation in the noradrenaline predominant parts of the brain. Intracerebroventricularly-injected beta-endorphin (5-10mcg) increased the formation of dopa in limbic forebrain, corpus striatum, and cerebral hemispheres; doses of 10-20mcg were needed to increase dopa accumulation in the diencephalon and lower brainstem. Naloxone and naltrexone (10-100mg/kg ip) decreased dopa formation in dopamine-rich areas by about 20-

25%, but did not affect dopa accumulation in noradrenaline predominant areas. Morphine (30mg/kg) and beta-endorphin (5mcg) increased the accumulation of 5-HTP; naloxone and naltrexone tended to decrease 5-HTP formation. Morphine and beta-endorphin also increased cerebral concentrations of tyrosine and tryptophan, whereas naltrexone decreased tryptophan concentration. Results suggest that opiate receptors and their endogenous ligands are involved in the regulation of dopamine and 5-hydroxytryptamine synthesis. 23 references. (Author abstract modified)

000486 Gauron, Eugene F.; Rowley, Vinton N. University of Iowa, College of Medicine **A failure to replicate cross-generational effects of diphenylhydantoin in an F1 offspring group.** Psychological Reports. 43(3):945-946, 1978.

An attempt was made to replicate the previous finding that undrugged offspring of rats chronically drugged with diphenylhydantoin demonstrated a learning deficit as measured from avoidance conditioning. The present findings call into question the previously published conclusions. One new finding was the lack of appreciable difference across drug groups regardless of the drug experience of the parent animal. 1 reference. (Author abstract modified)

000487 Gerald, M. C. Division of Pharmacology, College of Pharmacy, Ohio State University, Columbus, OH 43210 **Effects of ()-amphetamine on the treadmill endurance performance of rats.** Neuropharmacology (Oxford). 17(9):703-704, 1978.

The treadmill endurance performance of behaviorally naive, male Sprague-Dawley rats at 18.8m/minute was increased by 24-67% with low doses of ()-amphetamine (0.31-5mg/kg ip) and reduced by 18-47% at high doses (7.5-10mg/kg ip). At belt speeds ranging from 10.7to 26.8m/minute, a low dose of amphetamine (2.5mg/kg) increased running times by 33-101%, while a high dose (10mg/kg) reduced endurance by 17-43%. Amphetamine (1.25mg/kg) increased the endurance of fatigued rats by 44% at a belt speed of 26.8m/minutes. These biphasic effects on endurance performance may result from the central and peripheral actions of amphetamine. 8 references. (Author abstract)

000488 Gianutsos, Gerald; Hynes, Martin D.; Drawbaugh, Richard; Lal, Harbans. College of Pharmacy, University of Rhode Island, Kingston, RI 02881 **Similarities and contrasts between the effects of amphetamine and apomorphine in rats chronically treated with haloperidol.** Progress in Neuro-Psychopharmacology 2(2):161-167, 1978.

The effects of amphetamine and apomorphine on rats chronically treated with haloperidol were investigated and compared. Following discontinuation of chronic haloperidol, rats exhibited an enhanced spontaneous locomotor activity and an enhancement in stereotypy and locomotor stimulation produced by amphetamine. Amphetamine stimulation in normal rats was blocked by the catecholamine synthesis inhibitor, alpha-methyl-p-tyrosine (200mg/kg), but this did not block the amphetamine stimulation in haloperidol withdrawn rats. Locomotor stimulation or aggression caused by apomorphine was also enhanced during withdrawal from chronic haloperidol. Results support the hypothesis that supersensitivity of dopamine receptors develops following chronic blockade of those receptors by haloperidol, but also suggest that at specific brain areas, the haloperidol treatment may produce a long-lasting presynaptic change so that release of dopamine by amphetamine is inhibited. 41 references. (Author abstract modified)

000489 Glick, Stanley D.; Crane, Linda A. Department of Pharmacology, Mount Sinai School of Medicine, City University of New York, New York, NY 10029 **Function of nigral dopamine receptors?** Brain Research (Amsterdam). 156(2):380-381, 1978.

In a study of the function of nigral dopamine (DA) receptors, D-amphetamine, apomorphine, haloperidol, and DA were each directly administered unilaterally into the substantia nigra of female Sprague-Dawley rats. Intranigral injection of these dopaminergic agents had no effect on behavior in the hour following injection. Bilateral injections of D-amphetamine or haloperidol also failed to elicit any behavioral effects. These negative results did not elucidate the functional significance of nigral DA receptors. 11 references.

000490 Gold, Paul E.; Sternberg, Debra B. Department of Psychology, Gilmer Hall, University of Virginia, Charlottesville, VA 22901 **Retrograde amnesia produced by several treatments: evidence for a common neurobiological mechanism.** Science. 201(4353):367-369, 1978.

The effects on memory of various amnestic treatments in animals earlier treated with the alpha-adrenergic antagonist phenoxybenzamine (PBZ) were examined. Thirty minutes before being trained in a one-trial inhibitory passive avoidance task, animals received an injection of PBZ or saline. Immediately after training, each animal received one of the following amnestic treatments: stimulation of the frontal cortex or amygdala, pentylenetetrazol, diethyldithiocarbamate, or cycloheximide. In control animals, each-treatment produced retrograde amnesia. However, PBZ treated animals did not develop amnesia. These findings suggest that there may be a common neurobiological mechanism underlying the amnesias produced by many treatments. 13 references. (Author abstract)

000491 Gold, Paul E.; van Buskirk, Roderick. Department of Psychology, Gilmer Hall, University of Virginia, Charlottesville, VA 22901 **Posttraining brain norepinephrine concentrations: correlation with retention performance of avoidance training and with peripheral epinephrine modulation of memory processing.** Behavioral Biology. 23(4):509-520, 1978.

The relationship between posttrial brain norepinephrine (NE) levels, which vary with training conditions and with the specific posttrial epinephrine dose, and later retention performance was studied in male Sprague-Dawley rats. The findings indicate that the effects of epinephrine injections and footshock level on retention are closely related to transient posttraining decreases in whole brain norepinephrine concentrations. Posttraining norepinephrine levels, as measured 10 min after training and treatment, predict the later retention performance of groups of rats trained with high or low footshock and, in addition, predict the retroactive effects of posttrial epinephrine injections. These findings are consistent with the view that hormonal responses to training may modulate memory storage processing. The results also suggest that memory modulation may involve neuroendocrine mechanisms that include the central noradrenergic system. 44 references. (Author abstract modified)

000492 Gold, Paul E.; Van Buskirk, Roderick. Department of Psychology, Gilmer Hall, University of Virginia, Charlottesville, VA 22901 **Effects of alpha- and beta-adrenergic receptor antagonists on post-trial epinephrine modulation of memory: relationship to post-training brain norepinephrine concentrations.** Behavioral Biology. 24(2):168-184, 1978.

The effects of alpha-adrenergic and beta-adrenergic blocking agents on epinephrine effects on memory and on posttraining changes in norepinephrine (NE) content were examined in male Sprague-Dawley rats trained in a one-trial inhibitory avoidance task. Rats were given a 30-minute pretrial injection of saline, phenoxybenzamine, or propranolol and an immediate posttrial injection of saline or epinephrine. In the saline-pretreated rats,

epinephrine enhanced 24-hour retention of training with low footshock and impaired retention of training with high footshock. Pretrial injections of propranolol, but not phenoxybenzamine, attenuated epinephrine-induced enhancement of retention performance. Conversely, pretreatment with phenoxybenzamine but not propranolol-attenuated epinephrine induced retention impairment. Phenoxybenzamine but not propranolol attenuated the decrease in brain NE after high footshock training, and propranolol but not phenoxybenzamine blocked the transient decrease in brain NE after low footshock training. Results indicate that hormonally-mediated central noradrenergic activity may underlie retrograde amnesia and enhancement of memory processes. 44 references. (Author abstract modified)

000493 Gonzalez, Larry P.; Altshuler, Harold L. Behavioral Neuropharmacology Section, Department of Psychiatry, P. O. Box 3870, Duke University Medical Center, Durham, NC 27710 **Rat strain differences in the opiate abstinence syndrome.** Behavioral Biology. 24(2):209-219, 1978.

Albino rats from three inbred (BUF, LEW, and F-344) and two outbred (Holtzman and Sprague-Dawley) strains received subcutaneous implants of morphine or placebo pellets, followed by subcutaneous injections of naloxone hydrochloride (0.4mg/kg). The naloxone-precipitated opiate abstinence syndrome was observed 1, 2, or 3 days after implantation of the pellet. The strains differed in activity rate and in the number of escape attempts and wet-dog shakes that occurred prior to naloxone-precipitated withdrawal. Further strain differences were evident following naloxone-precipitated withdrawal, in spite of statistical correction of prenaloxone differences. The differences were most evident in the frequency of escape attempts, wet-dog shakes, teeth chattering episodes, and activity counts. After naloxone injection, responses were dependent on the length of exposure to the implanted morphine pellet in four of the strains observed; length of exposure did not affect the response profile of Holtzman rats significantly. These findings demonstrate significant strain differences in response to opiates in rats. 25 references. (Author abstract modified)

000494 Gordin, Ariel; Eriksson, Lea; Blom, Anne Kristine; Taskinen, Marja Riitta; Fyhrquist, Frej. Endocrine Research Laboratory, University of Helsinki, Helsinki, Finland **Lack of behavioral effects following intraventricular infusion of somatostatin in the conscious goat.** Pharmacology Biochemistry and Behavior. 9(2):255-257, 1978.

The effects of intravenous (IV) or intracerebroventricular (ICV) administration of somatostatin were investigated in conscious goats. IV infusion of 100-600mcg and ICF infusion of 600mcg somatostatin reduced secretion of insulin and growth hormone, but had no effect on the concentration of blood glucose. No behavioral effects were seen in goats with either IV or ICV infusions. These negative behavioral findings in goats are discussed in relation to previous positive findings in the rat. 13 references. (Author abstract modified)

000495 Grecksch, Gisela; Wetzel, Wolfram; Matthies, Hansjurgen. Institute of Pharmacology and Toxicology, Medical Academy, German Democratic Republic DDR-301 Magdeburg, East Germany **Effect of n-dipropylacetate on the consolidation of brightness discrimination.** Pharmacology Biochemistry and Behavior. 9(2):269-271, 1978.

In a study of the role of gamma-aminobutyric acid (GABA) mediated hippocampal systems in learning, the effect of the GABA enhancing agent n-dipropylacetate, on the consolidation of a brightness discrimination was investigated in male Wistar rats. Posttraining intrahippocampal injection of n-dipropylacetate resulted in improved retention performance 24 hours later. Results indicate that n-dipropylacetate affects consolidation of long-term memory and suggest that hippocampal GABA neurons play an important role in memory consolidation. 18 references. (Author abstract modified)

000496 Green, A. R. University Department of Clinical Pharmacology, Radcliffe Infirmary, Woodstock Road, Oxford, England **The neuropharmacology of depression.** Scottish Medical Journal (Glasgow). 25(1):66-67, 1978.

In a paper presented at the Scottish Symposium on Depression, held in Glasgow, Scotland, September 1977, the neurological and biochemical mechanisms of depression are discussed. It was found that treatment of rats with a monoamine oxidase inhibitor, L-tryptophan, or a 5-hydroxytryptamine (5HT) agonist produced a syndrome of hyperactivity which appears to be due to increased synthesis and release of 5-HT. It is asserted that the effect of drugs on the synthesis, release, and postsynaptic responses to increased 5-HT functional activity in the brain can be investigated using behavioral models and biochemical measurements. Investigations of the mechanism by which electroconvulsive therapy (ECT) produces its therapeutic response are described. It is suggested that an enhanced sensitivity of the postsynaptic monoamine receptor in the brain is the mechanism of the therapeutic effect of ECT. It is further suggested that antidepressants affect precursor availability, intraneuronal metabolism by monoamine oxidase, compartmentation, release and reuptake, and the postsynaptic response, all of which appear to control 5-HT functional activity. 10 references.

000497 Gregg, Barbara; Kittrell, E. Melanie W.; Domjan, Michael; Amsel, Abram. Department of Psychology, University of Texas, Austin, TX 78712 **Ingestional aversion learning in preweanling rats.** Journal of Comparative and Physiological Psychology. 92(5):785-795, 1978.

Ingestional aversions were conditioned in 12 and 15-day-old rats by infusing a .5% solution of saccharin into the oral cavity followed by an injection of lithium chloride. At both ages, subjects for which the saccharin exposure was followed by lithium injection within 2 to 3 minutes drank less when the saccharine solution was again presented by oral infusion 12 hours later; such suppressions of intake were not observed in subjects that previously received the saccharin and lithium in an unpaired fashion. Ingestional aversions were also learned by 12-day-old rats when a 30-minute interval was introduced between saccharin exposure and lithium toxicosis but not when toxicosis was delayed by 120 minute. In contrast, 15-day-old rats learned aversions with both the 30 and 130 minute delay intervals. Despite the absence of long delay learning in 12-day-olds, ingestional aversions conditioned at 12 days were retained for 2 weeks. These results provide further evidence of the associative abilities of neonatal rats and illustrate a developmental aspect of long delay learning. 34 references. (Author abstract)

000498 Grove, R. N. Departement de Pharmacologie, Universite Laval, Quebec, Canada **Suppression of intravenous drug self-administration by punishment in monkeys: selected observations.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1523-1530).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the suppression of intravenous drug self-administration by punishment in rhesus monkeys was reported. Catheterized monkeys were permitted to self-administer cocaine, morphine, or methohexital for each response; drug responses in alternate half hours were then punished by electric shock. A single session of punished cocaine-reinforced responding remained suppressed over 10 subsequent nonpunished sessions. Morphine-reinforced responding

in physically-dependent monkeys showed immediate punishment suppression, but morphine intake sometimes increased following punishment. High dose methohexital reinforced responding was refractory to shock suppression when the monkey was intoxicated. Phenobarbital pretreatment attenuated the suppression of low dose methohexital self-administration. It was suggested that barbiturate self-administration may be refractory to punishment procedures because of the drug's specific pharmacological action on punished behavior. 6 references. (Author abstract modified)

000499 Hatoum, Nabil S.; Geiger, Paul F.; Jobe, Phillip C. School of Pharmacy, Northeast Louisiana University, Monroe, LA 71209 **Effects of adrenergic receptor stimulation and blockade on electrically-induced tonic extensor convulsions in Ro 4-1284 pretreated rats.** Research Communications in Psychology, Psychiatry and Behavior. 3(4):369-377, 1978.

The effects of adrenergic receptor stimulation and blockade on electrically-induced tonic extensor convulsions were studied in rats pretreated with Ro-4-1284 to determine whether the anticonvulsant effects of endogenous norepinephrine (NE) and isoproterenol are suppressed by the alpha-receptors and beta-receptors in the central nervous system (CNS). Ro-4-1284, a benzoquinolazine monoamine depleting agent, markedly enhanced electroshock seizure in rats. Intracerebroventricularly (ICV) administered NE or ICV administered isoproterenol significantly antagonized this enhancing effect. Pretreatment with either phentolamine or propranolol blocked the antagonistic effects of NE and isoproterenol. These findings suggest that the anticonvulsant effects of endogenous NE are mediated through alpha-receptors and beta-receptors in the CNS. 15 references. (Author abstract modified)

000500 Hattan, David G.; Eacho, Patrick I. Department of Pharmacology and Toxicology, University of Maryland School of Pharmacy, Baltimore, MD 21201 **Relationship of ethanol blood level to REM and non-REM sleep time and distribution in the rat.** Life Sciences (Oxford). 22(10):839-845, 1978.

Direct electroencephalographic (EEG) and integrated electromyographic (EMG) recordings were analyzed for possible changes in rapid eye movement (REM) and nonREM sleep time in female Sprague-Dawley rats given 0, 1, 2, or 4g/kg ethanol. Ethanol decreased REM sleep and increased nonREM sleep in a dose-dependent manner. The degree of disruption of normal sleep/waking patterns also corresponded to blood ethanol concentrations for the different doses used. Results are discussed in relation to the influence of ethanol on human sleep, and it is suggested that chronic EEG and EMG recording in rats provides a useful model for studying the degree of disruption of sleep following chronic exposure to ethanol. 14 references. (Author abstract modified)

000501 Haycock, John W.; Van Buskirk, Roderick; Gold, Paul E.; McGaugh, James L. Department of Psychobiology, School of Biological Sciences, University of California, Irvine, CA 92717 **Effects of diethyldithiocarbamate and fusaric acid upon memory storage processes in rats.** European Journal of Pharmacology (Amsterdam). 51(3):261-273, 1978.

Diethyldithiocarbamate (DDC) and fusaric acid (FA), administered immediately after training, disrupted retention performance of male Sprague-Dawley rats trained on a one-trial inhibitory avoidance task. DDC also disrupted retention performance when the treatment was delayed 24 hours after training or was administered 10 days prior to training. Amnestic doses of DDC influenced brain and adrenal catecholamine levels, brain EEG activity, and hippocampal Timm's staining; amnestic doses of FA only affected catecholamine levels. The amnestic effects of DDC were dissociated from brain seizure activity produced by DDC. It is suggested that the disruptive effects of FA on retention are mediated by catecholaminergic systems, while those of DDC could involve additional mechanisms. 40 references. (Author abstract modified)

000502 Helke, Cinda J.; Raines, Arthur. Department of Pharmacology, Georgetown University, Schools of Medicine and Dentistry, 3900 Reservoir Road, N.W., Washington, DC 20007 **Antiextensor effects of 3,3-diphenyl-n-propylamine in the mouse.** European Jouranl of Pharmacology (Amsterdam). 48(3):231-235, 1978.

In a study of the antiextensor effects of 3,3-diphenyl-n-propylamine in the mouse, it was found that diphenylpropylamine has antiextensor activity in the MES test and worsens clonic seizures produced by pentylenetetrazol. The drug also prevents tonic hindlimb extension produced by large doses of pentylenetetrazol. Diphenylpropylamine appears, therefore, to be a phenytoin-like compound. However, unlike most antiextensor agents, diphenylpropylamine has neuroexcitatory effects and antagonizes barbital-induced loss of the righting reflex. 12 references. (Author abstract modified)

000503 Herman, Barbara H.; Panksepp, Jaak. Department of Psychology, Bowling Green State University, Bowling Green, OH 43403 **Effects of morphine and naloxone on separation distress and approach attachment: evidence for opiate mediation of social affect.** Pharmacology Biochemistry and Behavior. 9(2):213-220, 1978.

Tc determine the relationship between endorphins and social attachment, the effects of morphine and naloxone on indices of attachment were studied in Dunkin Hartley guinea-pigs. In infants, crying and separation-induced stress vocalizations were significantly decreased by single injections of morphine (0.25, 0.50, and 0.75mg/kg) in a dose-dependent manner. Naloxone (1mg/kg) reliably increased separation distress vocalizations in both juvenile and adult guinea-pigs. Morphine (1.0, 2.5, and 5.0mg/kg) also significantly decreased offspring/maternal proximity maintenance time, suggesting that opiates may be capable of replacing a function normally subserved by endorphins in reinforcing attachments. Results support the hypothesis that an endorphin-based addition-like process may underlie the maintenance of social attachments and that separation distress may reflect a state of endogenous endorphin withdrawal. 48 references. (Author abstract modified)

000504 Hernandez, Linda L.; Holohean, Alice M.; Appel, James B. Behavioral Pharmacology Laboratory, Department of Psychology, University of South Carolina, Columbia, SC 29208 **Effects of opiates on the discriminative stimulus properties of dopamine agonists.** Pharmacology Biochemistry and Behavior. 9(4):459-463, 1978.

The discriminative stimulus properties of morphine and pentazocine were studied in male Sprague-Dawley rats trained to discriminate the dopamine agonists amphetamine (0.75mg/kg) or apomorphine (0.38mg/kg) from saline in a two-lever operant task. Low doses of morphine appeared to produce a stimulus complex similar to that produced by apomorphine but different from that produced by amphetamine. Pentazocine showed no evidence of generalization to either the apomorphine or amphetamine cue. Neither opiate interferred with the discriminative stimuli produced by the dopamine agonists, although decreases in the number of animals responding occurred. 23 references. (Author abstract modified)

000505 Hinkova, L.; Tabacova, S. Institute of Hygiene and Nutrition, Medical Academy, Sofia, Bulgaria **Open field exploration in two successive generations of rats treated with carbon disul-**

phide throughout gestation. Activitas Nervosa Superior (Praha). 20(1):12-14, 1978.

In a paper read at the 13th Interdisciplinary Conference of Experimental and Clinical Study of Higher Nervous Functions, held at Piestany, Czechoslovakia during October 1976, open-field exploration in two successive generations of rats treated with carbon disulfide throughout gestation is described. Rats of two successive generations from mothers treated throughout gestation with carbon disulfide vapors in concentration of 50 to 200mg/m3 6 hours per day were tested on days 21, 30, and 90 for behavioral changes with Hall's open-field procedure. Results show that carbon disulfide inhibited the progeny's exploratory and emotional activity. Type and magnitude of the deviations were dose, age, and sex dependent. Females from both generations were more vulnerable than males. The changes were more marked during the period of development than in maturity, and more pronounced in the second generation. 5 references.

000506 Hoffman, William E.; Schmid, Phillip G.; Phillips, M. Ian. Department of Pharmacology, College of Medicine, Texas A&M University, College Station, TX 77843 **Central cholinergic and noradrenergic stimulation in spontaneously hypertensive rats.** Journal of Pharmacology and Experimental Therapeutics. 206(3):644-651, 1978.

The effects of intracerebroventricular injections of carbachol and norepinephrine on antidiuretic and pressor responses and drinking were compared in spontaneously hypertensive rats (SHR) of the Okamoto strain and weight matched control rats of the Wistar Kyoto (WKY) strain. Drinking responses to carbachol and antidiuretic responses to carbachol and norepinephrine did not differ between SHR and WKY, but pressor responses were potentiated in SHR. The potentiated pressor responses to central carbachol and norepinephrine injections were the result of increased vascular responsiveness to the antidiuretic hormone released by these drugs. A second, neurally mediated factor was also involved in the effects of carbachol. This additional factor could be increased sympathetic outflow to central drug stimulation, increased vascular reactivity to sympathetic outflow, decreased baroreflex responses, or a combination of these. 16 references. (Author abstract modified)

000507 Holaday, John W.; Loh, Horace H.; Li, Choh Hao. Neurochemistry and Neuroendocrinology Branch, Walter Reed Army Medical Center, Washington, DC 20012 **Unique behavioral effects of beta-endorphin and their relationship to thermoregulation and hypothalamic function.** Life Sciences. 22(17):1525-1536, 1978.

The behaviorally unique opiate effects of beta-endorphin and their relationship to thermoregulation and hypothalamic function were studied in rats. Intraventricular (ivt) injections of subcataleptic doses of beta-endorphin were observed to result in wet dog shakes. Subsequent to the wet dog shakes, copious salivation accompanied by a clonic, seizure-like state was occasionally observed to occur. This sialogogic effect of beta-endorphin was blocked by naloxone and diminished by injections of thyrotropin releasing hormone. None of these behaviors were observed following ivt injection of morphine in equiantinociceptive doses. Hypophysectomy was observed to attenuate or block these behaviors. Both the wet dog shakes and sialogogic seizures were demonstrated to be dependent upon dose as well as ambient temperature. It appears possible that the occurrence of initial wet dog shakes may result in the elevated body temperature which then precipitates excess salivation. Since both beta-endorphin-induced wet dog shakes and salivation were shown to be correlated with alterations in temperature, it is possible that these effects of beta-endorphin indicate a physiological role for that peptide in thermoregulation. 31 references. (Author abstract modified)

000508 Holcslaw, Terry L. Department of Pharmacodynamics and Toxicology, University of Nebraska Medical Center, Omaha, NE 68105 **Circadian rhythm in hexobarbital sleep time: a dose-response evaluation in the mouse.** Research Communications in Chemical Pathology and Pharmacology. 22(1):49-60, 1978.

Circadian rhythms in the dose response patterns of hexobarbital-induced sleep times and of in vitro drug metabolism were investigated in male Swiss-Webster mice. Sleep times were longer at 0800 hours and shortest at 0200 hours, in the dark period. Slopes were significantly flatter during the dark cycle relative to the light cycle, suggesting altered rates of drug disposition. Measurements of in vitro hepatic metabolism of hexobarbital, p-nitroanisole, and aminopyrine demonstrated a significant rhythm in oxidative drug metabolism, with maximal activity at 0200 hours. These findings demonstrate a rhythm in the duration of action of hexobarbital in mice that is dose-dependent and inversely related to a similar rhythm in microsomal drug metabolism. 13 references. (Author abstract modified)

000509 Hughes, John A.; Sparber, Sheldon B. Department of Biology, William Paterson College, 300 Pompton Road, Wayne, NJ 07470 **d-Amphetamine unmasks postnatal consequences of exposure to methylmercury in utero: methods for studying behavioral teratogenesis.** Pharmacology Biochemistry and Behavior. 8(4):365-375, 1978.

A method was developed using d-amphetamine (d-A) to study the postnatal effects of intrauterine exposure to methylmercury (MM) in rats. Pregnant rats were given various doses of MM at three different stages of gestation. Administration of 56% or 27% of the dose given on the first day (day 0) of pregnancy to 7- or 14-day pregnant rats, respectively, resulted in equivalent concentrations of MM in 19-day-old feti and 1-day and 1-week-old neonates. A single, 5mgMM/kg, oral dose on day 0, or its equivalent on days 7 or 14 of gestation did not produce any signs of toxicity in pregnant dams or their offspring. Operant level of bar-pressing and acquisition of a discrete trial autoshape task indicated no differences with respect to operant levels, rate of acquisition, or asymptotic performance resulting from MM exposure. The operant (autoshaped) behavior showed sex-related differences to the disrupting influence of d-A: females were significantly more sensitive than males. Moreover, both males and females whose dams were treated with MM on day 0 or 7 of pregnancy were significantly less affected by the d-A when compared with controls. Offspring born to dams given MM on day 14 of pregnancy did not show a differential effect of d-A. It is concluded that early prenatal exposure to low doses of MM can result in behavioral consequences subtle enough to require unmasking of the effects with psychotropic drugs. Periods may exist during development when the fetus is most susceptible to behavioral or functional teratogenic effects of exposure to chemical insult. 51 references. (Author abstract modified)

000510 Hynes, M. D.; Valentino, D.; Lal, H. Department of Pharmacology and Toxicology, University of Rhode Island, Kingston, RI 02881 **Role of dopaminergic systems in tolerance to neuroleptic-induced inhibition of food consumption.** Neuropharmacology (Oxford). 17(7):507-510, 1978.

In a study of the role of catecholamine systems in feeding behavior, selected neuroleptic drugs were administered to male hooded Long-Evans rats trained to consume their daily ration of food within 2 hours of food availability. Neuroleptics which are believed to be primarily antidopaminergic (benperidol, haloperidol, and pimozide) inhibited feeding in these animals; neuroleptics which act on noradrenergic systems or on both nora-

drenergic and dopaminergic systems (azaperone, chlorpromazine, and phenoxybenzamine) showed only weak inhibitory effects on feeding. Marked tolerance to the antidopaminergic agents, but not to the antinoradrenergic and mixed agents, was seen in rats pretreated chronically with haloperidol and tested 7-21 days after discontinuation of the chronic treatment. Results indicate that the inhibition of feeding by neuroleptic drugs is related to their antidopaminergic activity, rather than to their antinoradrenergic activity. 23 references. (Author abstract modified)

000511 Isaacson, Robert L.; McClearn, Gerald E. Dept. of Psychology, University of Florida, Gainesville, FL 32601 **The influence of brain damage on locomotor behavior of mice selectively bred for high or low activity in the open field.** Brain Research (Amsterdam). 150(3):559-567, 1978.

Locomotor activity was measured in mice with lesions restricted to the neocortex, in animals with hippocampal damage, and in sham-operated control mice of the selectively bred high and low open-field activity lines developed by J. C. DeFries. Postoperatively, the high activity animals with hippocampal lesions showed reduced activity relative to those with only neocortical damage, and their postoperative activity levels were uncorrelated with those obtained preoperatively. Testing the animals under reduced illumination enhanced locomotor activity, with the greatest increase demonstrated by high activity mice with hippocampal damage. While increases in activity under low illumination did occur in the low activity line, no significant group differences were observed. Amphetamine did not affect locomotor behavior of the high activity control animals, whereas doses of 1.0and 10.0mg/kg reduced the activity of low-activity mice. High-activity mice with hippocampal damage evidenced a significant increase in locomotor behavior after the 10.0mg/kg dose. These results emphasize that the behavioral effects of brain lesions and pharmacological manipulations cannot be adequately assessed without regard to genotype of the animals under investigation. 12 references. (Author abstract)

000512 Ishibashi, Shin-ichiro. Dept. of Psychosomatic Medicine, Kyushu University School of Medicine, Maidashi 3-1-1, Higashi-Ku Fukuoka, 812 Japan **Feeding mechanism at the neuronal level.** Japanese Journal of Psychosomatic Medicine (Fukuoka). 18(2):157-160, 1978.

At a symposium, ""Animal Models in Psychosomatic Disorders," sponsored by the 18th Annual Congress of the Japanese Society of Psychosomatic Medicine in Karume, May 1977, a paper was presented on feeding mechanisms at the neuronal level. Feeding behavior is mainly governed by the neuronal circuits that consist of the lateral hypothalamus (LH), i.e.,feeding center, and the ventromedial hypothalamus (VMH), i.e.,satiety center. Various techniques used to elucidate feeding mechanisms at the neurophysical level were presented. One is to apply chemicals directly to neurons with the aid of multibarreled microelectrodes. The action of acetylcholine, noradrenaline, dopamine, and others has been studied, and dopamine, in particular, may provide a clue for understanding the pathology of anorexia nervosa. The second method is an electrophysiological study of connection between hypothalamus and other neural elements. By this technique, morphological and functional relationships of the frontal cortex and the limbic system with LH have been revealed. The third method is to observe neuronal activity in conscious animals during feeding. This shows where motivation, anticipation, and integration for feeding behavior are formed. It is important to relate the results obtained at the neuronal level to the results of stimulation experiments, destructive experiments, drug injection experiments, and clinical cases. 12 references. (Journal abstract modified)

000513 Jacob, J. J. C.; Ramabadran, K. Laboratory of Pharmacology, Pasteur Institute, 28, rue du Docteur Roux, F-75724, Paris Cedex 15, France **Enhancement of a nociceptive reaction by opioid antagonists in mice.** British Journal of Pharmacology (London). 64(1):91-98, 1978.

The opioid antagonists naloxone, GPA-2163, levallorphan, and Mr-2266 reduced the latency of the jumping reaction of male Swiss mice in the hot plate test. The ()-isomers of levallophan and Mr-2266, which are devoid of antagonistic activity, did not increase this latency. In the same nociceptive reaction test, the enhancing effect of naloxone progressed action of morphine. The facilitatory effect of naloxone was not blocked by previous administration of morphine or etorphine, but was prevented by pretreatment with a high dose of buprenorphine. It is suggested that the enhancing effect of naloxone may be due to an antagonism of endogenous ligands for the opiate receptor. If so, these ligands would be involved in reaction to but not in perception of nociceptive stimuli. 53 references. (Author abstract modified)

000514 James, David T. D. Department of Psychology, New University of Ulster, Coleraine, County Londonderry, Northern Ireland **Barbiturate effects on nonreward are time dependent.** Behavioral Biology. 23(1):14-26, 1978.

The barbiturate effects on Sprague-Dawley rats which were trained on a discrete trial schedule of reinforcement that required them to use reward or nonreward in one trial as a cue for responding or response witholding respectively in the next trial were investigated. A subsedative dose of sodium amobarbital specifically disrupted performance following a nonrewarded trial, but only if the duration of the intertrial interval was 30 sec or longer. In a second experiment, a discrete trial reversal schedule was employed in which reward or nonreward in one trial was cue for appropriate responding in the next trial. Sodium amobarbital again specifically impaired performance following a nonrewarded trial when comparatively long intertrial interval was employed. The results illustrate that length of time between cue and response is an important variable in sodium amobarbital's effects upon nonreward associated behavior. It is suggested that the drug's behavioral effects might usefully be described in terms of selective interference with memory registration. 24 references. (Author abstract modified)

000515 James, T. A.; Massey, S. Department of Pharmacology, School of Pharmacy, University of London, 29/39 Brunswick Square, London WC1N 1AX, England **Evidence for a possible dopaminergic link in the action of acetycholine in the rat substantia nigra.** Neuropharmacology (Oxford). 17(9):687-690, 1978.

The activity of the nigrostriatal dopaminergic system was studied following unilateral injections of hemicholinium-3 (HC-3) or carbachol into the rat substantia nigra zona reticulata. HC-3 produced intense contralateral turning which was antagonized by haloperidol. HC-3 also reduced the dopamine (DA) concentration and increased the homovanillic acid (HVA) concentration in the ipsilateral striatum, indicating that removal of the effect of acetylcholine (ACh) from the nigra leads to activation of the nigrostriatal DA pathway. Conversely, carbachol produced ipsilateral turning with increased DA concentration and reduced HVA concentration in the ipsilateral striatum. The action of carbachol was antagonized by alpha-flupenthixol but not by beta-flupenthixol. Results suggest that ACh released from the substantia nigra acts by inhibiting nigrostriatal activity, possibly via an inhibitory dopaminergic link. 19 references. (Author abstract modified)

000516 Jarbe, Torbjorn U. C. University of Uppsala, Department of Psychology, P.O. Box 227, S-751 04 Uppsala, Sweden

Discriminative effects of morphine in the pigeon. Pharmacology Biochemistry and Behavior. 9(4):411-416, 1978.

Pigeons were trained to discriminate between the effects of morphine (6mg/kg) and saline injected intramuscularly 45 minutes prior to training in a food reward, two-choice discrimination paradigm. The median effective dose of morphine was 1.6mg/kg and the time interval after injection producing 50% morphine appropriate responding was 6 hours. A stereoisomeric requirement for discrimination was evident; treatment with 2mg/kg levorphanol resulted in responding on the morphine appropriate key, but treatment with the enantiomer dextrorphan (1-10mg/kg) yielded responding on the saline appropriate key. Methadone (3 and 6mg/kg) mimicked the effects of morphine, but delta9-tetrahydrocannabinol, d-lysergic acid diethylamide, and pentobarbital resulted in responding appropriate for the saline condition. The opioid antagonists naloxone and naltrexone blocked the stimulus effects of morphine, with naltrexone being slightly more potent than its congener. Results indicate that the discriminable effects of morphine in the pigeon are qualitatively similar to those previously observed in gerbils, rats, and squirrel monkeys. 30 references. (Author abstract modified)

000517 Jenner, P.; Marsden, C. D.; Thanki, C. M. University Department of Neurology, Institute of Psychiatry, London SE5, England **Behavioural changes induced by N,N-dimethyltryptamine in rodents.** British Journal of Pharmacology (London). 63(2):380, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society in Guildford, England, behavioral changes induced by N,N-dimethyltryptamine (DMT) in rodents were reported. DMT induced a dose-dependent hyperactivity syndrome characterized by increased locomotor activity prostration, hindlimb abduction, tremor, Straub tail, retropulsion, jerking, and vocalization in male Swiss S mice and Wistar rats. Manipulation of these behavioral effects by pargyline, cyproheptadine, methergoline, cinanserin, phenoxybenzamine, propranolol, haloperidol, pimozide, apomorphine, and amphetamine indicated that the DMT-induced behavioral syndrome consists of two components: the increased motor activity can be manipulated by drugs acting on cerebral 5-hydroxytryptamine and dopamine, while the other behavioral changes do not appear to be mediated by monoamine pathways. 2 references. (Author abstract modified)

000518 Johnson, Kenneth M.; Gordon, Marc B.; Ziegler, Michael G. Department of Pharmacology and Toxicology, University of Texas Medical Branch, Galveston, TX 77550 **Phencyclidine: effects on motor activity and brain biogenic amines in the guinea pig.** Pharmacology Biochemistry and Behavior. 9(4):563-565, 1978.

The effects of phencyclidine (PCP) on spontaneous motor activity and brain biogenic amine levels in guinea-pigs were examined. Doses of 2.5and 5.0mg/kg PCP significantly elevated spontaneous motor activity, but 7.5mg/kg PCP produced highly variable results which were not significantly different from control. Thirty minutes after administration of 5mg/kg PCP, no significant alterations were observed in concentrations of tryptophan, serotonin, 5-hydroxyindoleacetic acid, or norepinephrine in the forebrain and hindbrain. These results suggest that PCP produced behavioral effects in the guinea-pig similar to those observed in mice and rats. 11 references. (Author abstract modified)

000519 Jones, Catherine N.; Grant, Lester D.; Prange, Arthur J., Jr. Department of Pharmacology, Burroughs-Wellcome Co., 3030 Cornwallis Road, Research Triangle Park, NC 27709 **Stimulus properties of thyrotropin-releasing hormone.** Psychopharmacology (Berlin). 59(3):217-224, 1978.

Male Sprague-Dawley rats were trained in a two-level operant discrimination task using 20mg/kg thyrotropine releasing hormone (TRH) and saline as cues. Following completion of 40 daily training sessions, 22 of 25 rats showed a high level of discriminative responding. An evaluation of the time course of TRH indicated that the stimulus properties peak between 5-15 minutes and dissipate substantially by 55-65 minutes. During additional testing, rats showed dose-dependent generalization between the training treatments and novel doses of TRH (1, 5, 10, and 40mg/kg). However, animals failed to show generalization between the training drug and d-amphetamine sulphate (0.8, 1.6, or 2.4mg/kg). Animals trained to discriminate d-amphetamine sulfate (0.8or 1.6mg/kg) from saline also failed to show generalization between d-amphetamine and TRH (10, 20, or 30mg/kg). Microgram quantities of TRH (2.5-25mcg) administered into the lateral or third ventricle elicited dose-dependent generalization to the training drug, suggesting a central mechanism of action for this effect of TRH. 33 references. (Author abstract)

000520 Joseph, Rhawn; Hess, Steve; Birecree, Elizabeth. Department of Psychology, University of Delaware, 220 Wolf Hall, Newark, DE 19711 **Effects of hormone manipulations and exploration on sex differences in maze learning.** Behavioral Biology. 24(3):364-377, 1978.

The maze-learning ability of male rats castrated at birth, males and females treated with cyproterone acetate or sesame oil, and females treated with testosterone within the first 10 days postpartum was compared to that of nonmanipulated males and females (Experiment 1). Neonatal castration and injections of cyproterone acetate and testosterone were found to reverse normal sex differences significantly in maze learning. In Experiment 2, differences in gonadal hormone secretions and activities during adulthood on maze learning ability were assessed. It was found that gonadectomy did not significantly influence the performance of males and females. In Experiment 3, females were found to exhibit a greater tendency to explore and make irrelevent section entries on a maze that was problem-free. It is suggested that differences in maze learning are more greatly influenced by brain sex than by subsequent gonadal hormone secretions during adulthood and are also due to the tendency of females to make more exploration linked errors. 18 references. (Author abstract)

000521 Jurna, Ilmar; Heinz, Gunter; Blinn, Gerhard; Nell, Trudel. Pharmakologisches Institut der Universitat des Saarlandes, 665 Homburg/Saar, Germany **The effect of substantia nigra stimulation and morphine on alpha-motoneurones and the tail-flick response.** European Journal of Pharmacology (Amsterdam). 51(3):239-250, 1978.

The effect of unilateral stimulation of the substantia nigra on the reflex discharge of alpha-motoneurons and on reaction time of the tail flick response was investigated in female Wistar rats. In animals with prenigral decerebration, nigral stimulation facilitated monosynaptic alpha reflex activity, but did not affect gamma reflex activity. The facilitation of monosynaptic alpha reflex activity was reduced by 1mg/kg naloxone; 2mg/kg morphine did not change the number of alpha reflex discharges, but it did reduce alpha reflex latency, enhance the effect of nigral stimulation on latency, and abolish the effect of naloxone on nigral facilitation. Naloxone did not influence the antinociceptive effect of nigral stimulation, but morphine enhanced it in rats with intact brains. The antinociceptive effect of morphine enhanced it in rats with intact brains. The antinociceptive effect of morphine in animals with intact brains was abolished by prenigral decerebration. Inactivation of the nigral neurons by unilat-

eral microinjections of procaine or gamma-aminobutyric acid into the substantia nigra depressed the nociceptive reflex. 46 references. (Author abstract modified)

000522 Kalant, Harold; LeBlanc, A. Eugene; Gibbins, Robert J.; Wilson, Ann. Department of Pharmacology, University of Toronto, Toronto, Ontario, Canada M5S 1A8 **Accelerated development of tolerance during repeated cycles of ethanol exposure.** Psychopharmacology (Berlin). 60(1):59-65, 1978.

The acquisition and reacquisition of conventional and behaviorally augmented tolerance to ethanol were investigated in male Wistar rats. Rats were subjected to 1 to 4 cycles of daily gastric intubation with ethanol (6g/kg) for 16 days, separated by 17-day alcohol-free periods. Physiological tolerance produced by this treatment occurred in each cycle, disappeared completely in the drug-free periods; and developed more rapidly in the second and later cycles than in the first. Tolerance produced by the behavioral augmentation technique (daily test practice under the influence of ethanol) also developed more rapidly on a second than on a first cycle. With 25-day alcohol cycles separated by a 1-month drug-free period, the carry-over effect (more rapid acquisition of tolerance in the second cycle) was observed when tolerance was produced by the same technique in both cycles or by a crossover in either direction between the two techniques. 22 references. (Author abstract modified)

000523 Kane, William H.; Johnson, Eugene M., Jr. Department of Pharmacology, Washington University Medical School, St. Louis, MO 63110 **Effect of chronic clonidine treatment and withdrawal on tyrosine hydroxylase activity in peripheral ganglia and the locus coeruleus.** European Journal of Pharmacology (Amsterdam). 51(3):309-312, 1978.

Withdrawal from chronic clonidine treatment in male Sprague-Dawley rats resulted in a syndrome characterized by sympathetic hyperactivity. After 3 weeks of chronic oral administration of clonidine, tyrosine hydroxylase (TOH) activity was unchanged in superior cervical ganglia and locus coeruleus, but was reduced (45%) in the celiac ganglia. Abrupt cessation of treatment resulted in increases in TOH activity in superior cervical and celiac ganglia to 135% and 250% of controls, respectively, and to 170% in the locus coeruleus. A possible mechanism of physical dependence on clonidine is described. 12 references. (Author abstract modified)

000524 Kapnek, Elliott Jerome. University of Delaware **The role of serotonin in forebrain inhibition. (Ph.D. dissertation).** Dissertation Abstracts International. 39(3):1532-B, 1978. Ann Arbor, Univ. Microfilms No. 7816918. 72 p., 1978.

The hypothesis that serotonin plays a role in the EEG synchronization and behavioral inhibition mediated by the forebrain inhibitory areas was tested in cats. Sites of investigation included the basal forebrain, caudate nucleus, and anterior thalamus. It was found that fluoxetine, a specific inhibitor of serotonin reuptake, caused a decrease in the intensity of electrical stimulation needed to induce synchrony at all three sites. P-chloroamphetamine, which selectively reduces serotonin availability, substantially increased this threshold intensity. This indicates a functional link between serotonin availability and cortical synchrony mediated by these forebrain sites. These drugs were given after Ss had been successively trained to a fixed-ratio (FR) schedule followed by a differential reinforcement of a low rate of response (DRL) schedule. Results indicate that serotonin mediates behavioral inhibition as well as EEG synchronization. Findings are discussed in terms of possible mechanisms and neural substrates which underlie some functional relationships between the raphe-serotonergic system and forebrain inhibitory sites. (Journal abstract modified)

000525 Kari, Hanumath P.; Davidson, Priscilla P.; Kohl, Herbert H.; Kochhar, Man M. Department of Pharmacology and Toxicology, School of Pharmacy, Auburn University, Auburn, AL 36830 **Effects of ketamine on brain monoamine levels in rats.** Research Communications in Chemical Pathology and Pharmacology. 20(3):475-488, 1978.

The effects of ketamine (50mg/kg ip) on brain levels of epinephrine (E), norepinephrine (NE), dopamine (DA), serotonin (5-HT), and 5-hydroxyindoleacetic acid (5-HIAA) were studied in male Sprague-Dawley rats, using a sensitive spectrophotofluorometric method for determination of monoamines extracted from brain. Ketamine significantly increased brain E (25%), 5-HT (28%), and 5-HIAA (32%). In contrast, NE and DA levels were reduced by 43 and 58%, respectively, 30 minutes after ketamine injection. The increase in E and decreases in NE and DA levels remained significant for 12 hours after ketamine injection. Levels of 5-HT and 5-HIAA returned to near normal within 12 hours. 13 references. (Author abstract modified)

000526 Katovich, M. J.; Fregly, M. J. Department of Physiology, University of Florida, College of Medicine, Gainesville, FL 32610 **Mediation of isoproterenol-induced thirst in rats by beta2-adrenergic receptors.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(3):465-470, 1978.

The effects of several beta-adrenergic agonists and antagonists on isoproterenol-induced thirst were investigated in female Sprague-Dawley rats. The beta1/beta2 adrenergic antagonist d,1-propranolol (1mg/kg, ip), blocked the increase in water intake that usually accompanies acute subcutaneous administration of isoproterenol (25mcg/kg). Administration of d-propranolol (1mg/kg), which has little beta-adrenergic blocking activity, failed to affect the drinking response to isoproterenol. Practolol (125mg/kg), a beta1-adrenergic antagonist, also failed to affect isoproterenol-induced thirst. Butoxamine, a selective beta2-adrenergic antagonist, attenuated the drinking response to isoproterenol. Salbutamol (150mg/kg), a beta2-adrenergic agonist, mimicked the effects of isoproterenol on water intake. Results suggest that beta2-adrenergic receptors mediate isoproterenol-induced thirst in rat. 25 references. (Author abstract modified)

000527 Katz, J. L.; Barrett, J. E. Department of Psychology, University of Maryland, College Park, MD 20742 **Effects of ethanol on behavior under fixed-ratio, fixed-interval, and multiple fixed-ratio fixed-interval schedules in the pigeon.** Archives Internationales de Pharmacodynamie et de Therapie (Ghent). 234(1):88-96, 1978.

The effects of ethanol on behavior under fixed-ratio (FR), fixed-interval (FI), and multiple FR/FI schedules were investigated in pigeons. When each thirtieth peck on a response key produced food, high rates of responding were maintained; low to intermediate doses of ethanol left unchanged or increased those rates. Under the FI schedule, the first response after 5 minutes produced food and comparatively lower rates of responding were maintained; low to intermediate doses of ethanol only decreased overall rates of responding under the FI schedule. When the FI and FR schedules alternated regularly throughout a single experimental session, differential effects that depended upon the schedule of reinforcement were still obtained. Ethanol affected local rates of responding within the FI differently, depending on the rates prior to drug administration; lower rates were increased while higher rates were decreased. The effects of ethanol on schedule controlled responding depended on the particular rates and patterns of responding maintained by the schedule of reinforcement. 18 references. (Author abstract modified)

000528 Katz, R. J.; Carroll, Bernard J.; Baldrighi, Giulio. Mental Health Research Institute, Department of Psychiatry, University of Michigan, Ann Arbor, MI 48109 **Behavioral activation by enkephalins in mice.** Pharmacology Biochemistry and Behavior. 8(4):493-496, 1978.

The behavioral effects of enkephalins in mice were studied and compared to those of morphine. Intraventricular injection of long-lasting enkephalin analogues (D-Ala2 Leu and Met enkephalin-amides) produced a sustained elevation of psychomotor activity in mice. The motor syndromes were characterized by continual stereotyped activity and were reversed by naloxone pretreatment. Naloxone administered to a separate group of mice reduced the initial activation seen after exposure to a novel environment. The present findings suggest one or more endogenous opiates normally facilitates behavioral excitation in mice. 15 references. (Author abstract)

000529 Katz, R. J.; Gelbart, Jerry. Mental Health Research Institute, Department of Psychiatry, University of Michigan Medical Center, Ann Arbor, MI 48109 **Endogenous opiates and behavioral responses to environmental novelty.** Behavioral Biology. 24(3):338-348, 1978.

The possible contributions of endorphins to the exploratory behavior of Swiss-Webster albino mice were examined. Naloxone, a blocker of opiate receptors, depressed hole board exploratory activity and entry into a novel environment. It also reduced responding for sensory stimulation. Finally, it is reported that a direct correlation was demonstrated between exploratory behavior on the one hand, and enkephalin induced behavior activation on the other. 28 references. (Author abstract modified)

000530 Katz, R. J.; Turner, Barbara B.; Roth, Kevin; Carroll, Bernard J. Mental Health Research Institute, Department of Psychiatry, University of Michigan Medical Center, Ann Arbor, MI 48109 **Adrenergic control of motor activity: effects of PNMT inhibition upon open-field behavior in the rat.** Pharmacology Biochemistry and Behavior. 9(4):417-420, 1978.

The effects of two inhibitors of brain phenylethanolamine-N-methyltransferase (PNMT), the synthesizing enzyme for epinephrine, on open-field behavior were investigated in male Sprague-Dawley rats. The PNMT inhibitors 2,3-dichloro-alpha-methylbenzylamine and 7,8-dichloro,1,2,3,4-tetrahydroisoquinoline were injected intraperitoneally in doses that caused equivalent reductions in brain PNMT activity. The two drugs produced similar, dose-related decreases in ambulation, rearing, and defecation during open field behavioral testing. Results suggest that central epinephrine containing systems may be necessary for normal open field behavior, possibly as a result of interaction with other monoamines. 36 references. (Author abstract modified)

000531 Koehn, G. L.; Karczmar, A. G. Dept. of Pharmacology, Loyola University Stritch School of Medicine, 2160 South First Avenue, Maywood, IL 60153 **Effect of diisopropyl phosphofluoridate on analgesia and motor behavior in the rat.** Progress in Neuro-Psychopharmacology. 2(2):169-177, 1978.

The effects of diisopropyl phosphofluoridate (DFP) on analgesia and motor behavior of the rat were investigated. DFP produced analgesia which was quantitatively similar to that produced by morphine, as well as behavioral depression. Antinociception induced by DFP was reversed by atropine and also by naloxone. Serotonin (5-HT) levels were increased by DFP administration in several brain regions. Pretreatment of the animals with para-chlorophenylalanine prevented the DFP augmentation of 5-HT levels but did not affect behavioral effects or analgesia produced by DFP. Results suggest that DFP acts via the central cholinergic system to produce analgesia, that this effect may not depend on 5-HT, and that DFP and morphine included analgetic states may be related. 28 references. (Author abstract modified)

000532 Kokkinidis, Larry; Anisman, Hymie. Department of Psychology, Univesity of Saskatchewan, Saskatoon, Saskatchewan, Canada **Involvement of norepinephrine in startle arousal after acute and chronic d-amphetamine administration.** Psychopharmacology (Berlin). 59(3):285-292, 1978.

Treatment with d-amphetamine produced a dose-dependent increase in startle amplitude in response to a buzzer in male Swiss-Webster mice. This increase appeared to reflect a sensitization effect (enhanced responsivity as a function of repeated stimulus presentations). Treatment with alpha-methyl-p-tyrosine, which reduced whole brain concentration of dopamine and norepinephrine (NE), or treatment with bis-(4-methyl-1-homopiperazinylthiocarbonyl) disulphide, which reduced only NE, antagonized the effects of d-amphetamine on the startle reflex, suggesting a role of NE in this behavior. Startle amplitude was also reduced following chronic d-amphetamine treatment. The effect of d-amphetamine on startle response was independent of changes in drug-induced locomotor excitation. Findings suggest that tolerance occurs to those behaviors that involve a noradrenergic component. 30 references. (Author abstract modified)

000533 Koob, George F.; Riley, Susan J.; Smith, S. Christine; Robbins, Trevor W. Salk Institute, PO Box 1809, San Diego, CA 92112 **Effects of 6-hydroxydopamine lesions of the nucleus accumbens septi and olfactory tubercle on feeding, locomotor activity, and amphetamine anorexia in the rat.** Journal of Comparative and Physiological Psychology. 92(5):917-927, 1978.

The effects of 6-hydroxydopamine lesions of the nucleus accumbens septi (NAS) and olfactory tubercle (OT) were behaviorally examined in the rat. Lesions caused enhanced intake of wet mash in food-deprived rats tested in photocell activity cages during restricted 30 min sessions. This mild hyperphagia was accompanied by a significant hypoactivity in the group with NAS/OT lesions. No hyperphagia was observed during a prolonged 120 min test session or in free feeding tests conducted in the home cage. Anorexia induced by delta-amphetamine was unattenuated. A second experiment showed that the NAS/OT lesion also enhanced food intake in the photocell cages during 30-min sessions with dry food pellets but that food-associated drinking was concomitantly reduced. The results are consistent with the hypothesis that the behavioral changes caused by mesolimbic neuron destruction result in part from an inability to switch from one behavioral activity to another. 29 references. (Author abstract modified)

000534 Kornblith, Carol L.; Ervin, Gregory N.; King, Richard A. Department of Psychology, University of North Carolina, Chapel Hill, NC 27514 **Hypothalamic and locus coeruleus self-stimulation are decreased by cholecystokinin.** Physiology & Behavior. 21(6):1037-1041, 1978.

The effects of intraperitoneal cholecystokinin injections on self-stimulation rates were investigated in albino rats. Cholecystokinin, which produces behavioral satiety, decreased both lateral hypothalamic and locus coeruleus self-stimulation rates in a dose dependent fashion. Since the locus coeruleus has not been implicated in the control of feeding, these results suggest that satiety decreases the reinforcement value of brain stimulation, regardless of whether the stimulated structures are related to feeding. 22 references. (Author abstract modified)

000535 Kostowski, W.; Jerlicz, M.; Bidzinski, A.; Hauptmann, M. Department of Pharmacology, Psychoneurological Institute, 02-957 Warsaw, Poland **Evidence for existence of two opposite**

noradrenergic brain systems controlling behavior. Psychopharmacology (Berlin). 59(3):311-312, 1978.

The effects of bilateral lesions of the locus coeruleus (LC) and of the ventral noradrenergic bundle (VB) on brain monoamines, behavior, and responses to psychotropic drugs were investigated in male Wistar rats. Nine to ten days after lesions, rats with LC lesions showed increased activity. Lesions of the LC potentiated neuroleptic-induced catalepsy, while lesions of the VB almost completely abolished it. Apomorphine stereotypy was potentiated in LC lesioned rats, but was unchanged in VB lesioned rats. Both lesions significantly decreased forebrain noradrenaline (NA) concentrations. Rats with LC lesions showed increased 5-hydroxyindoleacetic acid concentrations, probably as a result of increased brain 5-hydroxytryptamine turnover after destruction of NA neurons belonging to the dorsal noradrenergic bundle (DB). The effects of VB lesions were opposite to those of the LC lesions, indicating that dopamine/NA interactions are different with respect to DB and VB. These systems appear to play opposite roles in regulating behavior and in the mechanism of action of psychotropic drugs. 11 references. (Author abstract modified)

000536 Kraemer, Gary William. University of Wisconsin-Madison **Effects of alterations in biogenic amine metabolism on the protest-despair response to peer separation in rhesus monkeys. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 78-4864, HC$15. MF$7.50. 314 p. 1978.

The repeated peer separation paradigm was used to evaluate the interaction of alterations in catecholamine (CA) or indolamine metabolism with despair in primates by administration of drugs altering biogenic amine metabolism or placebo across repeated peer separations. In a series of repeated peer separations involving two groups of four rhesus monkeys, it was found that: 1) alteration of CA metabolism with doses of alpha-methyl-paratyrosine (AMPT) as low as 25mg/kg/day potentiated the despair stage following separation while having no effect on group behavior preseparation; 2) inhibition of dopamine beta hydroxylase (DBH) with fusaric acid in doses as low as 5mg/kg resulted in less despair behavior; 3) inhibition of tryptophan hydroxylase with parachlorophenylalanine had no effect on despair behavior in doses up to 200mg/kg/day over a 12-day period. Results suggest that small decrements in norepinephrine (NE) and dopamine metabolism may potentiate despair behavior, while reduction of NE alone, with a possible increase in DA following inhibition of DHB, ameliorates postseparation despair. (Journal abstract modified)

000537 Krehbiel, Dwight Anthony. University of Wisconsin-Madison **The influence of behavioral measures on models of the role of hormones in induction of maternal behavior in the rat. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 78-4865, HC$15. MF$7.50. 138 p. 1978.

Measures of quality, nest building, and responses to intruders were used in an attempt to resolve the contradictions among hypotheses concerning the hormonal factors inducing maternal behavior in animals. Female rats' responses to male intruders were investigated at various intervals prepartum and postpartum and the effects of prolactin release inhibition or adrenalectomy on postpartum responses to intruders and weights of nests built in a 24-hour period were examined. Maternal behavior induced by pup exposure in primiparous and multiparous females was compared with that of parturient females; and a 21-day injection regimen of estradiol, progesterone, and prolactin was employed to induce maternal bahavior in ovariectomized females. Results indicate that 1) the hormonal changes of pregnancy and parturition are probably required for the full expression of maternal behavior regardless of parity, 2) changes in prolactin and corticosterone levels are not major factors in this regard, 3) ovarian hormones and prolactin are capable of enhancing the quality of maternal behavior without accelerating retrieval, and 4) the peak in estradiol concentration preceding parturition facilitates retrieval but does not greatly affect the quality of maternal behavior. (Journal abstract modified)

000538 Krejci, I.; Kupkova, B. Research Institute for Pharmacy and Biochemistry, 130 60 Prague 3, Czechoslovakia **Effects of vasopressin analogues on passive avoidance behavior.** Activitas Nervosa Superior (Praha). 20(1):11-12, 1978.

In a paper read at the 13th Interdisciplinary Conference of Experimental and Clinical Study of Higher Nervous Functions, held at Piestany, Czechoslovakia during October 1976, the effects of vasopressin analogues on passive-avoidance behavior are described. Passive-avoidance behavior of male rats was studied in a simple step-through type of apparatus, and latency of entering the dark chamber was recorded. Five vasopressin analogues prolonged retention of passive avoidance response compared to lysine-8-vasopressin, although there were differences as regards their protection against enzymatic cleavage. The issue of whether the effect is due to the longer presence of the analogues in the critical receptor compartment (lower rate of elimination) or their higher actual concentration at the receptors is discussed. 5 references.

000539 Krooth, Robert S.; Hsiao, Wen Luan; Lam, George F. M. Department of Human Genetics and Development, College of Physicians and Surgeons, Columbia University, 701 W. 168th St., New York, NY 10032 **Effects of natural pyrimidines and of certain related compounds on the spontaneous activity of the mouse.** Journal of Pharmacology and Experimental Therapeutics. 207(2):504-514, 1978.

Parenteral administration of uridine, 6-azauridine, cytidine, or thymidine depressed the spontaneous activity of adult male C-57 mice; 6-azauridine was much less potent than the other ribosides tested. Cytosine, barbituric acid, 2-thiobarbituric acid, 2,4-dihydroxypyridine, and a variety of pyrimidine catabolites had no effect on activity. Thymine, uracil, 6-azauracil, barbital, and phenobarbital increased activity at lower doses and decreased activity at higher doses. Uracil and 6-azauracil were about twice as potent as uracil as a depressant of activity. Thymine was more active than uracil and had about 10% the potency of barbital as a stimulant or depressant of activity. Results suggest that the barbiturates may affect arousal by simulating the structure or thymine or uracil at some receptor. 28 references. (Author abstract modified)

000540 Krsiak, M.; Pribik, V. Institute of Pharmacology, Czechoslovak Academy of Sciences, Prague, Czechoslavakia **Effect of amphetamine on sequences of behavioural activities in mice.** Activitas Nervosa Superior (Praha). 20(1):9-11, 1978.

In a paper read at the 13th Interdisciplinary Conference of Experimental and Clinical Study of Higher Nervous Functions, held at Piestany, Czechoslovakia during October 1976, the effect of amphetamine on sequences of behavioral activities in mice is described. The interactions of 17 pairs of male mice (always involving one aggressive singly housed and one non-aggressive group housed mouse) were studied to find out whether low doses of d,l-amphetamine, which do not evoke apparent stereotype behavior, produce changes in sequences between behavioral acts and postures in aggressive mice. Results indicate that amphetamine inhibits the tendency to attack and increases the tendency to flight in aggressive mice even after administration of a low dose which did not produce apparent ste-

reotype activities or significant changes in the frequency of aggressive and timid activities. 4 references.

000541 Landau, I. Theodore; Logue, Camille M.; Feder, Harvey H. Department of Psychology, Oakland University, Rochester, MI 48063 **Comparison of the effects of estradiol-17beta and the synthetic estrogen, RU-2858, on lordosis behavior in adult female rats and guinea pigs.** Hormones and Behavior. 10(2):143-155, 1978.

Female sexual behavior (as assessed by lordosis responses) in adult ovariectomized guinea pigs and rats was measured after a single subcutaneous injection of either the synthetic estrogen RU-2858 or estradiol-17beta (E) and a subsequent injection of progesterone (P). Thresholds for responsiveness to each estrogen were determined over a range of doses from 1 to 640mcg/kkg, of bodyweight. RU-2858 was able to stimulate lordosis at doses several times lower than E in both guinea pigs and rats. In general, guinea pigs were less sensitive to both extrogenic compounds than rats and were particularly insensitive to E. Approximately 40% of guinea pigs given RU-2858 displayed lordosis prior to P injection. These guinea pigs were also more sensitive than the remaining 60% of RU-2858-injected guinea pigs on several indexes of lordosis intensity. Rats did not respond behaviorally to RU-2858 without a subsequent P injection nearly as frequently as did guinea pigs. At the doses used in this study, E did not facilitate lordosis behavior in rats or guinea pigs in the absence of a subsequent P injection. 22 references. (Author abstract modified)

000542 Lazer, Edward S.; Aggarwal, Naranjan D.; Hite, Gilbert J.; Nieforth, Karl A.; Kelleher, Roger T.; Spealman, Roger D.; Schuster, Charles R. Section of Medicinal Chemistry and Pharmacognosy, School of Pharmacy, University of Connecticut, Storrs, CT 06268 **Synthesis and biological activity of cocaine analogs I; N-alkylated norcocaine derivatives.** Journal of Pharmaceutical Sciences. 67(12):1656-1658, 1978.

N-allylnorcocaine, N-dimethylallylnorcocaine, and N-cyclopropylmethylnorcocaine were synthesized and evaluated for cocaine-like activity. The compounds were prepared by alkylation of norcocaine, which was obtained by demethylation of cocaine with 2,2,2-trichloroethyl chloroformate followed by zinc/acetic acid reduction. The compounds were compared with cocaine in causing disruption of milk intake in female Sprague-Dawley rats, behavioral modification in squirrel monkeys, and inhibition of tritiated serotonin uptake by rat synaptosomes. The compounds showed cocaine-like activity but were less potent than cocaine in the latter two tests and were inactive in the milk intake test. 19 references. (Author abstract modified)

000543 Leaf, Russell C.; Wnek, D. J.; Lamon, Stacy; Gay, Patricia E. Rutgers University, New Brunswick, NJ 08903 **Despite various drugs, cats continue to kill mice.** Pharmacology Biochemistry and Behavior. 9(4):445-452, 1978.

d-Amphetamine (0.5-4.0mg/kg) and l-amphetamine (2-4mg/kg) inhibited spontaneous mouse killing in some but not all cats. Imipramine (64mg/kg), amitriptyline (32mg/kg), tranylcypromine (2mg/kg), tripelennamine (4mg/kg), scopolamine (1mg/kg), methylscopolamine (1mg/kg), chlordiazepoxide (16mg/kg), diazepam (4mg/kg), meprobamate (80mg/kg), pentobarbital (16mg/kg), chlorpromazine (8mg/kg), and haloperidol (0.5mg/kg) did not reliably inhibit mouse killing. In contrast to previous findings in rats, antidepressants and amphetamines did not consistently block mouse killing in cats. When individual cats were inhibited, the reduction in killing appeared to be related to anorexia rather than to affective arousal. 59 references. (Author abstract modified)

000544 Leaf, Russell C.; Wnek, D. J. Rutgers University, New Brunswick, NJ 08903 **Pilocarpine, food deprivation, and induction of mouse killing by cats.** Pharmacology Biochemistry and Behavior. 9(4):439-444, 1978.

The effects of pilocarpine, chlordiazepoxide, and food deprivation on mouse killing were investigated in cats. Food deprivation induced killing in about half the cats within 24 hours and in almost all cats by 72 hours. Pilocarpine (1.0mg/kg, with or without methyl atropine pretreatment) and chlordiazepoxide (1.0-2.0mg/kg) did not induce killing in cats as they do in rats. Pilocarpine produced a dose-related inhibition of spontaneous killing, but this was antagonized by methyl atropine. The side-effects of pilocarpine and chlordiazepoxide did not seem to account for their failure to induce killing. In contrast with food deprivation, the mechanisms by which pilocarpine and chlordiazepoxide induce killing in rats may not have homologues in cats. 44 references. (Author abstract modified)

000545 Leahy, J. P.; Stern, W. C.; Resnick, O.; Morgane, P. J. Worcester Foundation for Experimental Biology, 222 Maple Ave., Shrewsbury, MA 01545 **A neuropharmacological analysis of central nervous system catecholamine systems in developmental protein malnutrition.** Developmental Psychobiology. 11(4):361-370, 1978.

Four experiments were performed to evaluate the effects of developmental protein deprivation on the behavioral response of adult rats to treatments known to affect central nervous system catecholamine systems. Results show no group differences between protein malnourished and control animals in locomotor responsiveness to d-amphetamine or l-amphetamine, recovery from behavioral asymmetry produced by a unilateral lesion of the substantia nigra, or in the development of response patterns indicative of denervation supersensitivity. However, a dose dependent diminution in the ability of apomorphine to produce stereotyped behavior was noted in the malnourished group, suggesting that a class of brain dopamine receptors may be impaired or may have undergone homeostatic modification as a result of the undernutrition procedure. 28 references. (Author abstract)

000546 Leander, J. David. Department of Pharmacology, School of Medicine, University of North Carolina, Chapel Hill, NC 27514 **Comparing the effects of anileridine, alphaprodine and fentanyl on schedule-controlled responding by pigeons.** Journal of Pharmacology and Experimental Therapeutics. 206(3):624-635, 1978.

The effects of anileridine, alphaprodine, and fentanyl on responding under a multiple fixed-ratio, fixed-interval schedule of food presentation were studied in male White Carneaux pigeons. All three drugs produced dose-related decreases in responding under both components of the multiple schedule, but rate increases were observed after low doses of anileridine and alphaprodine in some birds. Naloxone (1mg/kg) antagonized the rate-increasing and rate-decreasing effects of doses of anileridine and alphaprodine of 10mg/kg or less, but not of higher doses. Chronic oral methadone or morphine (120mg/kg/day) produced only a slight cross-tolerance to the rate-decreasing effects of anileridine and alphaprodine. Naloxone (0.01, 0.1, and 1mg/kg) and chronic methadone or morphine administration shifted the dose effect curve to the right, indicating narcotic antagonism and methadone and morphine induced cross tolerance. These data indicate that the rate-decreasing effects of anileridine and alphaprodine are related only slightly to narcotic effects, whereas the rate-decreasing effects of fentanyl are primarily narcotic effects. 37 references. (Author abstract modified)

000547 Leander, J. David. Department of Pharmacology, School of Medicine, University of North Carolina, Chapel Hill, NC 27514 **An analysis of normeperidine's contribution to the rate-decreasing effects of meperidine.** Pharmacology Biochemistry and Behavior. 9(2):191-194, 1978.

The effects of normeperidine (1-17.5mg/kg) alone and in the presence of naloxone (1 and 10mg/kg) or beta-dimethylaminoethyl-2, 2-diphenylpropylacetate hydrochloride (SKF-525-A, 25 and 50mg/kg), were studied in male white Carneaux pigeons responding under a multiple fixed-ratio 30, fixed-interval 5 minutes schedule of food presentation. Neither naloxone nor SKF-525-A significantly affected responding when administered alone. Naloxone potentiated the rate decreasing effects of normeperidine, and SKF-525-A potentiated the rate decreasing effects of meperidine. Results indicate that meperidine and normeperidine both have nonnarcotic actions that produce decreases in schedule controlled responding. 27 references. (Author abstract modified)

000548 Lee, H. K.; Chai, C. Y.; Wayner, M. J.; Kao, L. C.; Chung, P. M. Department of Pharmacology, National Defense Medical Center, P.O. Box 8244, Taipei, Taiwan **Mesencephalic central gray: locus of morphine and electrical stimulation induced tail erection.** Pharmacology Biochemistry and Behavior. 9(2):221-226, 1978.

The role of the mesencephalic gray in tail erection was investigated in male albino mice, using intracerebral injection and electrical stimulation techniques. Morphine (1-10mcg) administered through chronically-implanted injection cannulae into the mesencephalic gray elicited dose-dependent tail erection in conscious mice equal to that produced by 20-100mg/kg subcutaneously-administered morphine. Intracerebral administration of 20mcg morphine into areas outside the central gray in the mesencephalon did not produce appreciable tail elevation. Electrical stimulation of the mesencephalic central gray produced dose-dependent tail erection, but stimulation of other brain areas did not. Pretreatment with intraperitoneal haloperidol abolished tail erection produced by intracerebral morphine or by electrical stimulation, and tail elevation elicited by subcutaneous morphine was antagonized by haloperidol administered into the mesencephalic central gray. Results indicate that the mesencephalic central gray is the locus of the morphine-induced tail erection. By analogy with the site and mechanism of morphine action, it is proposed that focal electrical stimulation activates a locomotor system concentrated in the periadqueductal regions that elicits tail elevation by transmitting impulses through the spinal cord. 13 references. (Author abstract modified)

000549 Lehman, Thomas; Peterson, George R. Department of Pharmacology, Wright State University School of Medicine, Dayton, OH 45435 **Naloxone-reversible analgesic action of SKF-525-A in mice.** Psychopharmacology (Berlin). 59(3):305-308, 1978.

Intraperitoneally administered 2-diethylaminoethyl-2,2-diphenylvalerate (SKF-525-A, 50-100mg/kg) was approximately 50% as potent and analgesic as d-propoxyphene hydrochloride in male NIH/Swiss mice. The analgesia produced by SKF-525A was only partially reversed. It is suggested that SKF-525-A may exert its antinociceptive effect partly through an interaction with central narcotic receptors and partly through a nonspecific sedating action. 21 references. (Author abstract modified)

000550 Leibowitz, Sarah F.; Arcomano, Anthony; Hammer, Norman J. Rockefeller University, 1230 York Avenue, New York, NY 10021 **Potentiation of eating associated with tricyclic antidepressant drug activation of alpha-adrenergic neurons in the paraventricular hypothalamus.** Progress in Neuro-Psychopharmacology. 2(3):349-358, 1978.

Tricyclic antidepressants (desipramine, protriptyline, and amitriptyline), which block presynaptic norepinephrine (NE) uptake and perhaps enhance its release, elicited eating after injection into the hypothalamic paraventricular nucleus of satiated male Sprague-Dawley rats. The magnitude of the eating response to antidepressant drugs was positively correlated with the effect of exogenous NE in the same rats. The eating response elicited by desipramine was selectively antagonized by central injection of alpha-adrenergic receptor blockers. Local pretreatment with NE synthesis inhibitors similarly blocked the desipramine eating response, but had no effect on NE elicited eating. It is suggested that antidepressant drugs stimulate eating through endogenous NE synthesized and stored within adrenergic neurons of the paraventricular hypothalamic region. 36 references. (Author abstract modified)

000551 Leibowitz, Sarah F.; Rossakis, C. Rockefeller University, New York, NY 10021 **Pharmacological characterization of perifornical hypothalamic beta-adrenergic receptors mediating feeding inhibition in the rat.** Neuropharmacology (Oxford). 17(9):691-702, 1978.

The epinephrine receptive sites in the perifornical lateral hypothalamus that suppress food consumption were studied via direct drug injection into the hypothalamus pargyline pretreated, male Sprague-Dawley rats. These sites were activated by epinephrine in a dose-dependent, stereochemically specific manner and were also activated by other adrenergic receptor stimulants (in descending order of potency: l-epinephrine and l-isoproterenol, d1-salbutamol, d1-terbutaline, l-norepinephrine, l-phenylephrine). The epinephrine sensitive effects were antagonized by beta-adrenergic blockers but not by alpha-adrenergic blockers. Serotonergic and cholinergic antagonists had little effect, but dopaminergic antagonists were effective in reversing epinephrine's action on feeding. The order of potency of the neuroleptics and structurally-related compounds in producing blockade was haloperidol, fluphenazine, chlorpromazine, pimozide, promazine; the neuroleptic promethazine and the tricyclic antidepressants imipramine and desipramine had no effect. Results indicate that the hypothalamic epinephrine sensitive sites that inhibit feeding have characteristics of classical beta-adrenergic receptors (beta2 subtype) and are closely associated with functionally similar dopaminergic receptors. 62 references. (Author abstract modified)

000552 Levitt, Robert A.; Stilwell, Donald J.; Evers, Timothy M. Department of Psychology, University of Alabama, Birmingham, AL 35294 **Morphine and shuttlebox self-stimulation in the rat: tolerance studies.** Pharmacology Biochemistry and Behavior. 9(4):567-569, 1978.

The development of tolerance to morphine was studied in Long-Evans rats trained to turn lateral hypothalamic electrical stimulation on and off by crossing back and forth in a shuttlebox. Injections 10mg/kg i.p. morphine doubled the amount of time the animals left the stimulation on, without altering off times. Tolerance did not develop to this action during five daily trials. Injections of 20mg/kg produced a 4- to 5-fold increase in average on times, together with a large increase in average off times. Tolerance did not develop to the on-time increase over five daily injections, but partial tolerance did develop to the off-time increase. The on-time increase appears to be based on a mechanism separate from the analgesic action of morphine and from the off-time increase. Distinct neurological structures and receptor systems may mediate these actions. 13 references. (Author abstract modified)

000553 Lineberry, Charles G.; Kulics, Albert T. Department of Pharmacology, School of Medicine, University of Pittsburgh, Pittsburgh, PA 15261 **The effects of diazepam, morphine and lidocaine on nociception in rhesus monkeys: a signal detection analysis.** Journal of Pharmacology and Experimental Therapeutics. 205(2):302-310, 1978.

Signal detection theory was used to assess the effects of diazepam, morphine, and lidocaine on nociception in rhesus monkeys. In monkeys trained to discriminate between pairs of noxious electrical cutaneous stimulus intensities, diazepam (0.062-0.25mg/kg) produced small but significant reductions in the percentage of correct discrimination responses, while morphine (0.125-0.5mg/kg) had no effect. In monkeys trained to escape from similar stimulus trains, morphine had no significant effects on percentage of escape responding, but diazepam and lidocaine both consistently reduced escape behavior. Analysis by signal detection theory techniques indicated that the reductions in escape responding produced by lidocaine reflected changes in stimulus sensitivity (perceptual factor) as well as changes in response bias (reactive factor). Behavioral changes produced by diazepam and morphine in the discrimination and escape tasks could be exclusively attributed to changes in response bias. Results indicate that psychophysiological measures of pain perception can be obtained using signal detection theory techniques to determine whether changes in responsivity to noxious stimuli are due to alterations in stimulus sensitivity or response bias. 27 references. (Author abstract modified)

000554 Lorenz, D.; Nardi, P.; Smith, G. P. Leidy Laboratory, Dept. of Biology, University of Pennsylvania, Philadelphia, PA 19104 **Atropine methyl nitrate inhibits sham feeding in the rat.** Pharmacology Biochemistry and Behavior. 8(4):405-407, 1978.

The effect of atropine methyl nitrate (AMN) on sham feeding and drinking in rats was studied. AMN inhibited sham feeding of a liquid diet in a dose-related manner. Identical doses of AMN had no effect on sham drinking of water. This differential effect is evidence that the inhibition of sham feeding was not due to peripheral anticholinergic disruption of licking, salivating, or swallowing. Results suggest that peripheral blockade of cholinergic receptors of the muscarinic type is a mechanism for eliciting satiety for food in the rat. 4 references. (Author abstract modified)

000555 Malick, Jeffrey B. Biomedical Research Dept., ICI Americas Inc., Wilmington, DE 19897 **Selective antagonism of isolation-induced aggression in mice by diazepam following chronic administration.** Pharmacology Biochemistry and Behavior. 8(4):497-499, 1978.

The selectivity of an observed antiaggressive effect of diazepam in mice was studied. Benzodiazepines in general are nonselective antagonists of isolation-induced aggression in mice following acute administration. However, after chronic administration of diazepam for 5 days, selective tolerance rapidly developed to the general central nervous system (CNS) depression produced by diazepam, whereas the antifighting activity was not diminished and in fact tended to be enhanced following multiple drug administrations. Thus, the antagonism of fighting in isolated mice by diazepam does not appear to be due solely to general CNS depressant properties. 29 references. (Author abstract modified)

000556 Marvola, Martti; Kivirinta, Ritva. Department of Pharmacology, School of Pharmacy, University of Helsinki, Helsinki, Finland **Pharmacokinetics and locomotor activity increasing effect of ephedrine in mice.** Acta Pharmacologica et Toxicologica (Kobenhavn). 43(5):381-386, 1978.

Blood levels of ephedrine were correlated with locomotor effects after oral and intravenous administration of the drug to male NMRI mice. The blood concentration data were fitted best by the two-compartment open-model after iv injection of ephedrine and by the one-compartment compartment model after oral administration. The locomotor stimulating effect of the drug did not have a linear relationship to the drug levels in the central or in the tissue compartment. Results suggest that ephedrine acts indirectly to stimulate locomotor activity. 6 references. (Author abstract modified)

000557 Mason, Stephen T.; Roberts, David C. S.; Fibiger, Hans C. Division of Neurological Sciences, Department of Psychiatry, University of British Columbia, Vancouver, BC V6T 1W5, Canada **Noradrenergic influences on catalepsy.** Psychopharmacology (Berlin). 60(1):53-57, 1978.

Widespread depletion of forebrain noradrenaline (NA), produced by the intracerebral injection of 4mcg 6-hydroxydopamine into the fibers of the dorsal noradrenergic bundle, potentiated catalepsy induced by 20mg/kg morphine and severely attenuated catalepsy induced by the cholinergic agonists pilocarpine and arecoline in male Woodlyn rats. The NA depletion did not affect haloperidol catalepsy, however. Results suggest that cholinergic catalepsy may be critically dependent on an intact noradrenergic substrate, perhaps through cholinergic receptors located either presynaptically on noradrenergic terminals or on the cell bodies of origin in the locus coeruleus. NA appears to play a modulatory role in morphine catalepsy, although other sites of action must also be involved. Ascending noradrenergic systems do not appear to influence haloperidol catalepsy. 33 references. (Author abstract modified)

000558 Massott, M.; Longo, V. G. Laboratorio di Farmacologia, Istituto Superiore di Sanita, Viale Regina Elena 299, I-00161-Rome, Italy **Alpha-chloralose and the central dopaminergic system.** Journal of Pharmacy and Pharmacology (London). 30(10):667, 1978.

The effects of alpha-chloralose on behavior and on brain dopamine content and metabolism were investigated in Wistar rats. Alpha-chloralose (3.12-100mg/kg ip) had no effect on levels of dopamine, homovanillic acid, or 3,4-dihydroxyphenylacetic acid in whole brain or in corpus striatum. In doses of 12.5and 25mg/kg, alpha-chloralose induced sedation. Doses of 50 and 100mg/kg had a biphasic effect consisting of jerks and tremors, followed by hemiballism, ataxia, myorelaxation, and loss of righting reflex. Since alpha-chloralose does not alter brain dopamine content and metabolism, the EEG and biochemical similarities between this drug and baclofen, muscimol, and gamma-hydroxybutyrate cannot be ascribed to a common effect on the dopaminergic system. 7 references.

000559 Matthews, R. T.; Chiou, C. Y. Department of Pharmacology, University of Texas, Southwestern Medical School, Dallas, TX 75235 **Cholinergic stimulation of the caudate nucleus in rats: a model of Parkinson's disease.** Neuropharmacology (Oxford). 17(10):879-882, 1978.

Unilateral injections of cholinergic drugs (physostigmine, acetylcholine, neostigmine, and carbachol) into the caudate nucleus of male albino rats caused a complex behavior pattern which included contralateral limb tremors and dystonia. The behavior pattern was blocked by administration of anticholinergic drugs (acetyldiethylcholine and diethylcholine). Carbachol-induced tremor activity was dose dependent if injections were made into the caudate nucleus of rats rested for one week between injections. Inhibition of carbachol-induced forelimb tremors is a potentially useful screen for antiparkinsonism drugs. 7 references. (Author abstract modified)

000560 McMillan, D. E.; Leander, J. D. Department of Pharmacology, University of Arkansas for Medical Sciences, 4301 W. Markham, Little Rock, AR 72201 **Chronic chlordiazepoxide and pentobarbital interactions on punished and unpunished behavior.** Journal of Pharmacology and Experimental Therapeutics. 207(2):515-520, 1978.

Dose/effect curves were determined in male Sprague-Dawley rats for the effects of drugs on punished and unpunished responding maintained by fixed-interval schedules of food presentation before, during, and after the drinking of large daily doses of chlordiazepoxide and pentobarbital. An average intake of 50mg/kg/day of chlordiazepoxide produced tolerance to the rate-decreasing effects of chlordiazepoxide on unpunished responding and cross tolerance to the rate-decreasing effects of pentobarbital. During chlordiazepoxide drinking, rate-increasing effects of both chlordiazepoxide and pentobarbital on punished responding were apparent. There was no evidence for cross tolerance between chlordiazepoxide and chlorpromazine. An average intake of 100mg/kg/day of pentobarbital produced similar evidence of tolerance to the rate-decreasing effects of pentobarbital on unpunished responding and cross tolerance to the rate-decreasing effects of chlordiazepoxide. Removal of chlordiazepoxide from the drinking water temporarily increased unpunished responding. However, 6 weeks after withdrawal of chlordiazepoxide or pentobarbital from the drinking water, the dose/effect curves for injections of these drugs appeared to be returning to their original positions. 16 references. (Author abstract)

000561 Mendel, David. Rayne Institute, St. Thomas' Hospital, SE1, London, England **A technique for the investigation of the effects of drugs on hearing.** British Journal of Pharmacology (London). 63(2):348-349, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society in Guildford, England, a technique for the investigation of the effects of drugs on hearing was described. Using this technique in conscious and unsedated guinea-pigs, responses to a click of fixed intensity are stable, repeatable, and sensitive to the administration of drugs that modify auditory function. This model was used to investigate the efferent control of the ear, using atropine sulfate and physostigmine. Results indicate that acetylcholine is the efferent transmitter involved in the click evoked response. 2 references. (Author abstract modified)

000562 Menon, M. K.; Clark, W. G.; Neumeyer, J. L. Psychopharmacology Research Laboratory, Veterans Administration Hospital, Sepulveda, CA 91343 **Comparison of the dopaminergic effects of apomorphine and (-)-N-n-propylnorapomorphine.** European Journal of Pharmacology (Amsterdam). 52(1):1-9, 1978.

The dopaminergic effects of (-)-N-n-propylnorapomorphine (NPA) and apomorphine were compared in behavioral and biochemical studies in male Swiss mice. NPA was 2.3times more active than apomorphine in producing stereotypy in mice. This potency ratio was not changed by pretreatment with reserpine 4 hours prior to testing, but after 24 hours pretreatment with reserpine NPA was 6.5times more active than apomorphine in producing locomotor stimulation and 8.7times more active in producing stereotypy. A second dose of reserpine or alpha-methyl-p-tyrosine (alphaMT) given 4 hours prior to NPA administration considerably reduced the locomotor effects of NPA. NPA was also 91 times more active than apomorphine in inhibiting the alphaMT-induced depletion of brain dopamine in mice. Results suggest that apomorphine possesses a direct dopamine receptor stimulant effect, while NPA has both direct and indirect effects. It is suggested that NPA acts not only on the striatonigral dopamine system, but also on mesolimbic areas. 27 references. (Author abstract modified)

000563 Miczek, Klaus A.; Luttinger, Daniel. Department of Psychology, Carnegie-Mellon University, Pittsburgh, PA 15213 **Differential attenuation of two kinds of conditioned suppression by d-amphetamine and pentobarbital.** Journal of Pharmacology and Experimental Therapeutics. 205(2):282-290, 1978.

The effects of d-amphetamine and pentobarbital on conditioned suppression of operant behavior during prefood and preshock stimuli were investigated in male Sprague-Dawley rats. Amphetamine increased responding during the prefood stimulus and further decreased responding during the preshock stimulus. Pentobarbital increased responding during the preshock stimulus and, to a lesser extent, during the prefood stimulus. The effects of amphetamine and pentobarbital on response rates during prefood and preshock stimuli were not systematically related to changes in rate of leverpressing in the absence of these stimuli. Methysergide increased the rate of responding, but did not alter either kind of conditioned suppression. Results demonstrate specific drug effects on different types of conditioned response suppression that are not directly related to effects on overall rate of responding. 36 references. (Author abstract modified)

000564 Middaugh, Lawrence D.; Read, Elizabeth; Boggan, William O. Department of Biochemistry, Medical University of South Carolina, Charleston, SC 29403 **Effects of naloxone on ethanol-induced alterations of locomotor activity in C57BL/6 mice.** Pharmacology Biochemistry and Behavior. 9(2):157-160, 1978.

Ethanol (2 or 3g/kg) or water was injected intraperitoneally into c57BL/6 mice 15 minutes after injections of naloxone 3mg/kg or saline, and locomotor activity was monitored for 60 minutes beginning 30 minutes or immediately after the ethanol injection. Mice given the low dose of ethanol were more active than controls during the second half of the activity tests. Mice given the high dose of ethanol were less active than controls during the first half of the activity tests, but returned to control levels or above during the second half of the tests. When injected 45 minutes prior to the activity test, naloxone did not alter locomotor activity or influence ethanol-induced activity changes. When injectd 15 minutes prior to testing, however, naloxone alone produced a transient reduction in activity during the first half of testing; during the second half of testing, all animals injected with naloxone had activity levels similar to controls and lower than those of animals injected with ethanol in the absence of naloxone. Results indicate that naloxone, at a dose and time period that does not alter locomotor activity, is capable of blocking ethanol-induced excitatory effects. 15 references. (Author abstract modified)

000565 Miksic, Stephen; Shearman, Gary; Ial, Harbans. Department of Pharmacology and Toxicology, University of Rhode Island, Kingston, RI 02881 **Generalization study with some narcotic and nonnarcotic drugs in rats trained for morphine-saline discrimination.** Psychopharmacology (Berlin). 60(1):103-104, 1978.

Male Long-Evans rats were trained to lever-press on a fixed ratio of 10 schedule for food reinforcement and to respond differentially on two levers while discriminating the effects of 10mg/kg morphine injection from those of saline injection. Following discrimination training, the morphine stimulus was generalized to propoxyphene, methadone, fentanyl, and sulfentanyl in a dose-dependent manner; saline was generalized to alcohol, pentobarbital, azaperone, clonidine, naloxone, and p-chloroamphetamine. p-Chloroamphetamine failed to block the morphine stimulus. Results indicate that discriminative stimuli produced by morphine generalize with other narcotics, but not with nonnarcotic drugs, including those with pharmacological actions re-

sembling the actions of morphine. 10 references. (Author abstract modified)

000566 Moleman, P.; Versluis, D. J.; Bruinvels, J. Dijkzigt Academic Hospital, Dr. Molewaterplein 40, Rotterdam, The Netherlands **Is morphine-induced catalepsy related to activation of dopaminergic neurones?** Psychopharmacology (Berlin). 60(1):35-39, 1978.

The involvement of dopaminergic neurons in morphine-induced catalepsy was investigated in male Wistar rats. Intraperitoneal (ip) administration of 20mg/kg morphine 30 minutes after alpha-methyl-para-tyrosine (AMPT) resulted in marked catalepsy, which was maximal 40 to 90 minutes after injection of morphine. Pretreatment with AMPT did not alter the induction of morphine catalepsy, but prolonged its duration. Naloxone entirely abolished the morphine-induced catalepsy, and apomorphine antagonized this catalepsy for 40 minutes when administered simultaneously with morphine. Amphetamine potentiated morphine-induced catalepsy and also produced catalepsy directly; morphine antagonized amphetamine-induced sniffing. Atropine and bicuculline were ineffective against morphine-induced catalepsy. Catalepsy induced by haloperidol (1mg/kg ip) in AMPT pretreated rats differed from morphine-induced catalepsy; repeated testing was an important factor in the induction of catalepsy by haloperidol but not by morphine. It is suggested that catalepsy may be induced by blockade of striatal dopamine receptors by neuroleptics or by activation of mesolimbic or mesocortical dopamine systems by morphine. 24 references. (Author abstract modified)

000567 Nagayama, Haruo; Takahashi, Ryo. Dept. of Neuropsychiatry, Nagasaki University School of Medicine, Sakamotomachi 7-1, Nagasaki, 852 Japan **Animal models of depression.** Japanese Journal of Psychosomatic Medicine (Fukuoka). 18(2):121-125, 1978.

At a symposium, ""Animal Models in Psychosomatic Disorders," sponsored by the 18th Annual Congress of the Japanese Society of Psychosomatic Medicine in Karume, May 1977, a paper was presented on a study in which rats were conditioned by the use of sound as a conditioned stimulus and tetrabenazine as an unconditioned stimulus. Their spontaneous locomotor activity was considered as a parameter of behavior. After a number of conditioning trials were repeated, a definite period of motionlessness in rats was observed on presentation of a conditioned stimulus alone. Pretreatment of rats with imipramine made the conditioned motionlessness imperfect, and considerable amount of locomotor activity was observed. The findings show that conditioned motionlessness is considered as an appropriate animal model of human depression. Biochemical analyses of brain samples indicate that this motionlessness was due to an excess of functional activity of serotonin. 6 references. (Journal abstract modified)

000568 Nishikawa, Tadashi; Tanaka, Masatoshi. Dept. of Pharmacology, Kurume University School of Medicine, Asahi-machi 67, Kurume City, 830 Japan **Social isolation in rats as a model psychosis.** Japanese Journal of Psychosomatic Medicine (Fukuoka). 18(2):161-169, 1978.

At a symposium, ""Animal Models in Psychosomatic Disorders," sponsored by the 18th Annual Congress of the Japanese Society of Psychosomatic Medicine in Karume, May 1977, a paper was presented on the hypothesis that changes in the brain composition of isolated animals results in their behavioral changes at the time of stress. Male Wistar rats were isolated immediately after weaning for 12 weeks and were exposed to electric footshock of various intensities. The shock-elicited jumping behavior was measured every 10 minutes for 1 hour. The frequency of jumping in isolated rats was lower than that of grouped rats, especially when the shock was most intense. There was no significant difference in monoamine turnover rate between the two groups, and noradrenaline turnover markedly increased in both groups. Chlorpromazine suppressed jumping in both groups with stronger suppression in isolated rats. Methamphetamine facilitated jumping in grouped rats while the drug depressed it in isolated rats. These results and the behavioral similarity between the isolated rats and 6-hydroxydopamine treated rats in the footshock situation suggest that the receptor supersensitivity of central catecholaminergic neurons is involved in the behavioral change in isolated rats. It may be said that social isolation could serve as an animal model for schizophrenia in which interactions of environmental influence and abnormal biological process are noted. 25 references. (Journal abstract modified)

000569 Novack, Gary D.; Stark, Larry G. Mental Retardation Research Center, 58-242 NPI UCLA Center for the Health Sciences, Los Angeles, CA 90024 **Benzhydryl piperazines and phenobarbital as discriminative stimuli in rats and mice.** Research Communications in Psychology, Psychiatry and Behavior. 3(4):335-351, 1978.

Three benzhydryl piperazines, SC-13504 (also known as ropizine, an anticonvulsant), hydroxyzine (HDX, an anxiolytic), and chlorchyclizine (CCZ, an antihistaminic) were investigated for their ability to elicit drug discrimination in rats using a T-maze paradigm, and their ability to elicit state-dependent learning in mice, using a passive avoidance on trial learning paradigm. In both experiments, phenobarbital (PB) was employed as a prototype drug. In the T-maze paradigm, PB (36mg/kg) elicited good drug discrimination. Protocol using five trials per training session, and a double alternation training schedule, was used to train naive rats to discriminate the effects of HDX, SC-13504 or CCZ from an appropriate vehicle. None of the three benzhydryl piperazines was able to act as a discriminable stimulus. Neither PB, nor any of the three benzhydryl piperazines tested elicited state-dependent learning in mice. The effectiveness and relative safety of SC-13504 as an anticonvulsant in many experimental models of epilepsy, coupled with its failure to elicit drug discrimination of state-dependent learning suggest that the drug may be a selective anticonvulsant. 36 references. (Author abstract)

000570 Oades, Robert D.; Isaacson, Robert L. Zoologisches Institut der Technischen, Hochschule, Schnitpahnstrasse, 3, D-61 Darmstadt, Germany **The development of food search behavior by rats: the effects of hippocampal damage and haloperidol.** Behavioral Biology. 24(3):327-337, 1978.

Exploration and food searching of intact rats and rats with neocortical and hippocampal damage were investigated in food-deprived rats who were required to locate four pellets of food located in four of 16 holes in an enclosed area. Half of each group received haloperidol and half received a saline injection 20 min before sessions four through 10. No injections were given on the first three sessions or on the final 11th session. Animals with hippocampal lesions visited more nonfood holes than did control animals and did not develop consistent sequences of food hole visits. The administration of haloperidol reduced the number of consistent sequences of food seeking behaviors by intact animals without significantly affecting the efficiency of performance, as measured by the number of nonfood holes visited. It is reported that haloperidol reduced the number of visits to nonfood holes of animals with hippocampal lesions. 16 references. (Author abstract modified)

000571 Oei, Tian P. S.; King, Maurice G. Department of Psychology, LaTrobe University, Bundoora, Victoria 3083, Austra-

lia **Effects of extended training on rats depleted of central and/or peripheral catecholamines.** Pharmacology Biochemistry and Behavior. 9(2):243-247, 1978.

The effects of extended training on acquisition of a two-way avoidance response were investigated in male Wistar rats depleted of central or peripheral catecholamines. Rats were given intraperitoneal, intracisternal, or combined injections of 6-hydroxydopamine prior to training in the shuttlebox avoidance task. No behavioral deficit was observed in animals depleted of peripheral noradrenaline, but the escape and avoidance performance of animals with central catecholamine depletion was significantly poorer than that of controls. 14 references. (Author abstract modified)

000572 Oke, A. F.; Adams, R. N. Department of Chemistry, University of Kansas, Lawrence, KS 66045 **Selective attention dysfunctions in adult rats neonatally treated with 6-hydroxydopamine.** Pharmacology Biochemistry and Behavior. 9(4):429-432, 1978.

Adult Sprague-Dawley rats treated intracisternally with 6-hydroxydopamine (6-OHDA) during the perinatal period were trained on a black/white discrimination. The 6-OHDA-treated animals did not differ significantly from control animals in response to alterations in cue shape and cue location. However, when irrelevant stimuli were added to the discriminative array, the 6-OHDA-treated group showed marked impairment of performance throughout the period of distraction. These results indicate that a selective attention mechanism in rats can be manipulated via alterations in brain catecholamine levels. 18 references. (Author abstract modified)

000573 Olds, M. E. Division of Biology, California Institute of Technology, Pasadena, CA 91125 **Inhibitory evoked unit activity in the medial forebrain bundle in the rat and self-stimulation behavior.** Neuropharmacology (Oxford). 17(7):515-523, 1978.

The effect of local application of norepinephrine (NE) on inhibitory unit responses evoked in the medial forebrain bundle during self-stimulation behavior in male Holtzmann rats was studied. NE was applied in 10 consecutive injections over a period of 4.5minutes, each injection delivering 0.012mcl/second with 30-second intervals between injections. NE produced a temporary inhibition of spontaneously firing unit activity with each injection of the series; this effect resembled the action of rewarding stimulation but lasted longer. More marked effects were observed after the initial injection in the series and with low doses of NE. During self-stimulation, low doses of NE potentiated the electrically inhibitory neural responses correlated with threshold intensity but not those correlated with optimal intensity rewarding stimulation; high doses reduced the duration of the inhibition at threshold intensity self-stimulation, reduced the latency of the rebound effect that followed inhibition, and blocked the inhibitory responses correlated with optimal intensity self-stimulation. Application of low doses of NE led to an increase in locomotion, sniffing behavior, and increased self-stimulation; high doses produced immobility, depression, or blockade of self-stimulation. 15 references. (Author abstract modified)

000574 Olpe, Hans-Rudolf. Biology Research Laboratories, Pharmaceutical Division, Ciba-Geigy Ltd., Basel, Switzerland **Pharmacological manipulations of the automatically recorded biting behavior evoked in rats by apomorphine.** European Journal of Pharmacology (Amsterdam). 51(4):441-448, 1978.

An apparatus was developed for the automatic recording and scoring of stereotyped biting behavior induced by apomorphine and amphetamine in male Sprague-Dawley rats. Intraperitoneal apomorphine (0.5-50mg/kg) and amphetamine (0.5-15mg/kg) elicited dose-dependent biting behavior. Apomorphine was more potent, more efficacious, and less toxic than amphetamine. When rats were challenged on 3 consecutive days with a single injection of 15mg/kg apomorphine, the biting response was attentuated by about 80% on days 2-4, indicating hypersensitization of dopamine receptors. Recovery to control level took 17-54 days. The biting rate in response to a second injection was only minimally reduced (10%) if there was a time lag of 7 days between the first and second apomorphine injection. Fluphenazine, pimozide, and haloperidol markedly antagonized the apomorphine-evoked biting in a dose-dependent fashion. Chlorpromazine, thioridazine, clozapine, baclofen, and maprotilene partly antagonized the biting response; imipramine, muscimol, diazepam, and sulpiride had no significant effect on biting behavior. Results are consistent with the hypothesis that apomorphine elicits biting behavior by stimulating dopamine receptors. 20 references. (Author abstract modified)

000575 Olson, Richard D.; Kastin, Abba J.; Montalbano-Smith, Dolores; Olson, Gayle A.; Coy, David H.; Michell, Gary F. Department of Psychology, University of New Orleans, New Orleans, LA 70122 **Neuropeptides and the blood-brain barrier in goldfish.** Pharmacology Biochemistry and Behavior. 9(4):521-524, 1978.

The effects of intraperitoneal and intracranial (IC) injections of 21 neuropeptides on spontaneous activity in the goldfish were examined. The peptides differentially decreased activity, with the greatest alterations in activity produced by two new enkephalin analogues, D-A1a2,F5Phe4-enkephalin-NH2 and NalphaNepsilon-bis(D-A1a2-enkephalin)-Lys-NH2. Overall, decreased activity began approximately 3 minutes after IC injection and 6 minutes after IP injection. The longer latency after IP injections may indicate the time required for the substance, in its original or fragmented form, to reach and cross the blood-brain barrier. Most of the peptides, or possibly their metabolites, appeared to enter the brain, since no significant difference in activity was observed after IP and IC injections. 31 references. (Author abstract modified)

000576 Paalzow, Gudrun. Department of Pharmacology, Pharmaceutical Faculty, University of Uppsala, Biomedical Center, Box 573, S-751 23 Uppsala, Sweden **Development of tolerance to the analgesic effect of clonidine in rats. Cross-tolerance to morphine.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(1):1-4, 1978.

The influence of chronic treatment with clonidine on analgesia produced by clonidine and morphine was studied in male Sprague-Dawley rats. Electrical stimuli were applied to the tail, and analgesia was measured as the increase in the threshold voltage that elicited vocalization. Twenty-two hours after the last of 14 injections of increasing doses of clonidine over 7 days, the acute analgesic effects of both clonidine and morphine were reduced, indicating the development of tolerance. Pretest vocalization thresholds were unchanged by long-term treatment with clonidine or saline. In contrast, acute administration of clonidine enhanced the effect of morphine. The tolerance developed after long-term treatment with clonidine may be associated with changes in brain noradrenergic mechanisms. 27 references. (Author abstract modified)

000577 Pearlman, Chester A. Psychiatry Research, Boston Veterans Administration Hospital, 150 South Huntington Avenue, Boston, MA 02130 **Interference with taste familiarization by several drugs in rats.** Behavioral Biology. 24(3):307-316, 1978.

Drug effects on taste familiarization in hooded rats were examined. Injection of imipramine, chlordiazepoxide, pentobarbital, scopolamine, or penicillin after the first conditioned stimulus (CS) exposure interfered with learned safety. Further experi-

ments showed that this drug effect was not due to aversiveness of the drugs, generalized neophobia, retroactive state dependence, gustatory interference, impaired memory, or overshadowing of the CS, and that the drug effect could be abolished with familiarization. Conditioned suspicion due to alteration of the internal milieu is proposed as a possible mechanism of the drug effect. Such suspicion, it is maintained, can facilitate subsequent taste aversion but is not aversive in itself. It is suggested by time course studies that conditioned suspicion may be yet another form of long delay learning. 10 references. (Author abstract modified)

000578 Pert, Agu; Rosenblatt, Jack E.; Sivit, Carlos; Pert, Candace B.; Bunney, William E., Jr. Biological Psychiatry Branch, NIMH, Bethesda, MD 20014 **Long-term treatment with lithium prevents the development of dopamine receptor supersensitivity.** Science. 201(4351):171-173, 1978.

Long-term treatment of rats with haloperidol which produced an increased sensitivity to the locomotor and sterotypic effects of apomorphine is reported. This behavioral dopaminergic supersensitivity was accompanied by increased binding of (3H)spiroperidol in the striatum. Rats treated concurrently with lithium and haloperidol failed to develop both behavioral sensitivity to apomorphine and increased striatal dopamine receptor binding. The ability of lithium to prevent recurrent manic-depressive episodes, it is suggested, may be related in part to its ability to stabilize dopaminergic receptor sensitivity. 17 references. (Author abstract)

000579 Peters, Ronald H.; Hughes, Richard A. Department of Psychology, Iowa State University, Ames, IA 50010 **Naloxone interactions with morphine- and shock-potentiated tonic immobility in chickens.** Pharmacology Biochemistry and Behavior. 9(2):153-156, 1978.

Opiate receptor involvement in tonic immobility was investigated in White Rock chickens. Various doses of the opiate antagonist naloxone were administered prior to measurement of morphine-potentiated, shock-potentiated, or unpotentiated tonic immobility. Naloxone attenuated morphine-potentiated immobility, but had no effect on shock-potentiated or unpotentiated immobility. Results suggest that morphine-potentiated tonic immobility in chickens is opiate specific. 17 references. (Author abstract modified)

000580 Pfeifer, W. Dean; Bookin, Howard B. Ribicoff Research Center, Norwich Hospital, Box 208, Norwich, CT 06360 **Vasopressin antagonizes retrograde amnesia in rats following electroconvulsive shock.** Pharmacology Biochemistry and Behavior. 9(2):261-263, 1978.

Male Sprague-Dawley rats given an electroconvulsive shock (ECS) immediately following training in a passive avoidance task showed amnesia when tested 24 hours after training. This amnesia was prevented if lysine vasopressin (LVP) was injected 1 hour before training or 1 hour before the first test trial. Results indicate that it is unlikely that either ECS or LVP affect memory storage. 14 references. (Author abstract)

000581 Pfister, William R.; Hollingworth, Robert M.; Yim, George, K. W. Department of Pharmacology and Toxicology, School of Pharmacy and Pharmacal Sciences, Purdue University, West Lafayette, IN 47907 **Increased feeding in rats treated with chlordimeform and related formamidines: a new class of appetite stimulants.** Psychopharmacology (Berlin). 60(1):47-51, 1978.

Low doses of the formamidine pesticide, chlordimeform (CDM), induced voracious daytime feeding in male Sprague-Dawley rats. Following 10mg/kg CDM, food intakes were five times control intakes after 3 hours and 1.1times control intakes after 24 hours. Other selected formamidines, such as the N-demethylated metabolite of CDM and amitraz, increased 3-hour food intake by two and five times control intake, respectively. Anorexia accompanied by excessive central stimulation was noted with higher doses of CDM (above 40mg/kg). Results indicate that the formamidines constitute a new class of appetite stimulants, which should be useful agents for the study of feeding behavior. 21 references. (Author abstract modified)

000582 Pierce, Lynda M.; Van Twyver, Henry. no address **Effects of monosodium glutamate.** Psychological Reports. 43(2):462, 1978.

Five experiments on the behavioral effects of monosodium glutamate (MSG) on rats are reported. The experiments were undertaken to assess: 1) the amount of MSG rats consume voluntarily per day, 2) the effects of MSG on biting and emotional behaviors, and 3) the effects of MSG on activity level and seizure activity. Results do not support the hypothesis that MSG induces hyperemotionality, but increased biting was observed. 9 references.

000583 Poling, A.; Appel, J. B. Behavioral Pharmacology Laboratory, Dept. of Psychology, University of South Carolina, Columbia, SC 29208 **Effects of quipazine on behavior under a multiple schedule of reinforcement.** Pharmacology Biochemistry and Behavior. 8(4):491-492, 1978.

The effects of three doses of quipazine (1, 5, and 10mg/kg) on the performance of rats under a multiple fixed-ratio 15 fixed-interval 60-second schedule of food reinforcement were examined. In the absence of drug, response rates under the fixed-ratio component were much higher than response rates under the fixed-interval component. Rates under the fixed-ratio component were decreased by quipazine in a dose-dependent fashion, while response rates under the fixed-interval component were increased by the lowest dose and decreased by the two higher doses of the drug. It is noted that the effects of LSD and quipazine on schedule-controlled behavior seem to be similar, as are their discriminative stimulus properties. 8 references. (Author abstract)

000584 Poling, Alan D.; Appel, James B. Behavioral Pharmacology Laboratory, Department of Psychology, University of South Carolina, Columbia, SC 29208 **d-Amphetamine and fixed-interval performance: effects of establishing the drug as a discriminative stimulus.** Pharmacology Biochemistry and Behavior. 9(4):473-476, 1978.

The effects of d-amphetamine on fixed interval (FI) responding were assessed in male Sprague-Dawley rats under conditions in which the drug had been paired previously with either a fixed ratio (FR) schedule of reinforcement or with punishment. At a dose of 0.5mg/kg, d-amphetamine increased the response rates of rats under an FI 60-second schedule. The drug produced greater increases in responding under the FI schedule when drug administration had been explicitly paired with an FR 20-second schedule, and decreased responding under the FI schedule when the drug had been paired with electric shock punishment. Random administration of amphetamine before FR or punishment sessions did not modify drug effects under the FI schedule. These results indicate that drug effects can be modified by conditioning. 12 references. (Author abstract modified)

000585 Porsolt, Roger D.; Bertin, Anne; Jalfre, Maurice. Centre de Recherche Delalande, 10, rue des Carrieres, 92500 Rueil-Malmaison, France **""Behavioural despair" in rats and mice: strain differences and the effects of imipramine.** European Journal of Pharmacology (Amsterdam). 51(3):291-294, 1978.

The effects of imipramine on behavioral despair were investigated in four strains of rats (Sprague-Dawley/Charles River; Sprague-Dawley/Iffa Credo; Wistar/Charles River; and Wistar/Iffa Credo) and three strains of mice (CD/Charles River; NMRI/Evic Ceba; and OF-1/Iffa Credo). When forced to swim in a restricted space, male animals of all strains rapidly ceased attempts to escape and became immobile. All four rat strains showed a similar duration of immobility, but the Wistar/Iffa Credo strain showed no response to imipramine at doses that significantly reduced immobility in the three strains. In contrast, the three strains of mice differed markedly in the amount of immobility observed in the nondrug condition, but showed a similar reduction after treatment with imipramine. These results show that the strain of animal used in pharmacological experiments is an important variable that must be taken into account when attempting to replicate results from one laboratory to another. 7 references.

000586 Powley, Terry L.; MacFarlane, Bruce A.; Markell, Mariana S.; Opsahl, Charles A. Department of Psychology, Yale University, New Haven, CT 06520 **Different effects of vagotomy and atropine on hypothalamic stimulation-induced feeding.** Behavioral Biology. 23(3):306-325, 1978.

The effects of subdiaphragmatic vagotomy and atropine administration on thresholds for stimulation-induced feeding and self-stimulation were investigated in male rats. The animals first received permanent bipolar stimulating electrode implants in the lateral hypothalamus. Once stable thresholds for stimulation elicited feeding and self-stimulation were obtained, bilateral subdiaphragmatic vagotomies were performed or intraperitoneal injections of atropine sulfate were administered. The first experiment indicates that vagotomy produces a marked disruption of stimulation-elicited feeding but does not interfere with either self-stimulation elicited from the same electrode or stimulation-induced gnawing obtained from comparable lateral hypothalamic sites. In the second experiment, production of an acute blockade of efferent vagal activity by an injection of atropine sulfate before testing had little effect on either feeding or self-stimulation. These results suggest that the vagus may display a significant role in the mediation of stimulation-induced feeding and that the effects of vagotomy on feeding cannot be reproduced by acute cholinergic blockade. The effects of surgical vagotomy on stimulation-induced feeding may reflect interruption of afferent mechanisms, elimination of atropine refractory efferent systems, or disruption of feeding behavior caused by the sequelae of chronic vagal dysfunction. 40 references. (Author abstract modified)

000587 Prado-Alcala, Roberto A.; Bermudez-Rattoni, Federico; Velazquez-Martinez, David, N.; Bacha M., Gustavo. Physiology Department, School of Medicine, National University of Mexico, P .O. Box 70250, Mexico 20, D.F., Mexico **Cholinergic blockade of the caudate nucleus and spatial alternation performance in rats: overtraining induced protection against behavioral deficits.** Life Sciences. 23(9):889-896, 1978.

The effects of microinjections of scopolamine into the anterior caudate nucleus (CN), posterior CN, or parietal cortex on the conditioned responses of male Wistar rats given high or low degrees of training on a spatial alternation task were investigated. Injection of scopolamine into the anterior CN impaired performance in animals with a low degree of training. Animals with a high degree of training showed no performance decrement after scopolamine. Results indicate that overtraining induces protection against performance decrements in complex learned behaviors. 17 references. (Author abstract modified)

000588 Ridley, R. M. Division of Psychiatry, Clinical Research Centre, Watford Road, Harrow HA1 3UJ, England **The effects of ()-amphetamine and apomorphine on visually determined behaviour in the marmoset.** British Journal of Pharmacology (London). 63(2):382-383, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society, in Guildford, England, the effects of d-amphetamine and apomorphine on visually-determined behavior in the marmoset were reported. A decrease in the influence of the external environment during amphetamine-induced checking (head movements) was observed, indicating that the checking was not visually determined. Attention to external stimuli was not decreased by apomorphine-induced checking, however, and the increase in locomotion induced by apomorphine did not prevent the external visual control of behavior. 1 reference. (Author abstract modified)

000589 Robbins, T. W. Psychological Laboratory, Downing Street, Cambridge CB2 3EB, England **The acquisition of responding with conditioned reinforcement: effects of pipradrol, methylphenidate, d-amphetamine, and nomifensine.** Psychopharmacology (Berlin). 58(1):79-87, 1978.

The effects of pipradrol (5-15mg/kg), methylphenidate (5-15mg/kg), d-amphetamine (0.5-3.0mg/kg) and nomifensine (5-15mg/kg) on the acquisition of responding with conditioned reinforcement (CR) were investigated. In the first experiment, pipradrol produced a dose-dependent increase in responding on the CR lever, but a dose-dependent decrease on the NCR (no CR) lever. Methylphenidate and d-amphetamine produced inconsistnet results, and nomifensine produced a general reduction in responding. In another experiment, pipradrol greatly increased responding in thirsty rats during the acquisition of new lever-press response reinforced solely by a stimulus formerly paired with water. The effects of the drug transferred to the undrugged state if the rats had received previous experience with pipradrol in the testing setting. The results are discussed in terms of the other behavior effects of psychomotor stimulant drugs. 25 references. (Author abstract modified)

000590 Rogers, L. J.; Drennen, H. D. Pharmacology Department, Monash University, Clayton, Victoria, 3168, Australia **Cycloheximide interacts with visual input to produce permanent slowing of visual learning in chickens.** Brain Research (Amsterdam). 158(2):479-482, 1978.

The effects on visual learning of bilateral injections of cycloheximide into the forebrain of 2-day-old chickens were investigated. Slowed learning on a visual discrimination task was observed only if the chicken viewed either intersecting lines or small spots for 3 hours immediately after cycloheximide administration. Intersecting lines or spots presented in the peripheral field of vision were ineffective. Results indicate that the areas of the brain that process information from the central field of vision show specificity with respect to the kind of neural activity that interacts with cycloheximide. Since intersecting lines were effective while nonintersecting lines passing through the central field were not and since ganglion cells in the retina respond to edges but not to angles, it seems likely that the site of interaction between cycloheximide and neural activity is at a higher level of integration than the retina. 7 references.

000591 Rudeberg, Claes. Research Institute Wander, Wander Ltd., P.O. Box 2747, CH-3001 Berne, Switzerland **Evidence for a dopaminergic dominance in the 4,alpha-dimethyl-m-tyramine-induced hypermotility in mice.** Psychopharmacology (Berlin). 59(3):247-254, 1978.

The effects of various drugs on the hypermotility induced in mice by 4,alpha-dimethyl-m-tyramine (H77/77) were investigated. The H77/77-induced hypermotility was strongly inhibited by centrally-acting dopamine (DA) receptor blockers and poten-

tiated by drugs that increase central DA activity by release of DA, uptake inhibition, or inhibition of monoamine oxidase. The DA receptor agonists bromocriptine and ergocornine potentiated hypermotility, but the effects of short-acting DA agonists (apomorphine and piribedil) were partly obscured. Inhibition of tyrosine hydroxylase with alpha-methyltyrosine totally blocked H77/77 hypermotility. Blockers of alpha-adrenoceptors and beta-adrenoceptors had no effect on H77/77 hypermotility, or inhibited it only at very high doses. Alpha-adrenoceptor agonists had no clear effects. No correlation was found between the H77/77 inhibiting effect of antidepressant drugs and their ability to inhibit noradrenaline (NA) uptake. Several antiserotonergic compounds blocked the effect of H77/77, and a 65% drop in hypermotility was obtained after inhibition of 5-hydroxytryptamine (5-HT) synthesis with 6-fluorotryptophan. Substances that increased central 5-HT activity (l-5-hydroxytryptophan and fenfluramine) were inactive. Anticholinergic drugs increased H77/77 hypermotility, while cholinergic drugs produced no dose-related effect. It is concluded that DA plays the dominant role in H77/77-induced hypermotility in mice, although functional NA and 5-HT systems appear to be a prerequisite for the full H77/77 effect. 43 references. (Author abstract modified)

000592 Russell, Richard L.; Pihl, R. O. Santa Monica College, Santa Monica, CA 90406 **Determinants of amphetamine-produced stereotyped behavior in the rat.** Psychological Reports. 43(2):575-579, 1978.

Two experiments designed to determine the dose response relationship between amphetamine and the incidence and form of stereotyped behavior in the rat are described. Male and female Ss from three different strains of rats (19 Hooded, 4 Tryon Maze Bright, 4 Tryon Maze Dull) were tested. Results indicate that the incidence of stereotyped behavior is a monotonic increasing function of dose. Variations in the form of the response to dose are described. Both experiments provide evidence for the existence of constitutional effects. Locomotor activity, which was also measured, displayed dose response curves which differed consistently from those for most types of stereotyped behavior. 10 references. (Author abstract)

000593 Russell, Richard L.; Pihl, R. O. Department of Psychology, McGill University, 1205 McGregor Avenue, Montreal, Quebec, Canada H3A IBI **The effect of dose, novelty, and exploration on amphetamine-produced stereotyped behavior.** Psychopharmacology (Berlin). 60(1):93-100, 1978.

The effects of dose, novelty, and exploration on amphetamine-induced stereotypy were investigated in Wistar rats. The incidence of stereotyped behavior was a monotonic increasing function of amphetamine dose. Rats placed in novel environments showed less stereotypy than rats placed in familiar environments after amphetamine injection. Studies of rats exposed to a novel stimulus in an otherwise familiar environment after amphetamine administration indicate that novel stimuli evoke exploratory responses that are incompatible with stereotypy. 29 references. (Author abstract modified)

000594 Russell, Roger W.; Macri, James. School of Biological Sciences, Flinders University of South Australia, Bedford Park, South Australia 5042 **Some behavioral effects of suppressing choline transport by cerebroventricular injection of hemicholinium-3.** Pharmacology Biochemistry and Behavior. 8(4):399-403, 1978.

The behavioral effects of cerebroventricular injection of hemicholinium-3 (H-3) were studied to test the hypothesis that variations of the choline (Ch) uptake system associated with cholinergic nerve terminals would be reflected selectively by changes of conditioned avoidance behavior in rats. H-3, which primarily affects the high affinity component of Ch transport, thus reducing endogenous levels of acetylcholine (ACh) and the synthetic capacity of cholinergic nerve terminals, was administered cerebroventricularly at 5 doses ranging from 0.0(saline control) to 10.0mcg. Whole brain ACh levels determined by GCMS analysis following microwave fixation ranged from 25.0to 5.0nmol/.1g. Trend analyses demonstrate a precise dose-dependent relation between neurochemical and behavioral variables: median trials to condition increased as ACh levels decreased. More detailed analyses of the results indicate that suppression of high affinity Ch transport in brain is associated with deficiencies in the use of information, and not with sensory input and storage, nor with motor output. 17 references. (Author abstract modified)

000595 Saari, Matti; Ings, R.; Pappas, B. A. Department of Psychology, Carleton University, Ottawa, Ontario, K1S 5B6, Canada **Ontogeny of the post-decapitation convulsion in the rat: effects of neonatal systemic 6-hydroxydopamine.** Neuropharmacology (Oxford). 17(10):873-877, 1978.

Two systemic injections of 6-hydroxydopamine (6-OHDA) on the first day of life caused transient elevations of spinal dopamine and serotonin and permanent depletion of norepinephrine in Wistar rats. Spinal concentrations of these amines peaked at 10, 15, and 20 days, respectively, in untreated rats. The 6-OHDA treatment abolished decapitation convulsions during adulthood, but the convulsion latency and duration were normal at 20 days of age. These data are consistent with previous reports suggesting maturation of aspects of seizure manifestations at around 20 days. The tonic/clonic aspects of seizures may consist of an early-maturing trigger involving spinal noradrenergic projections from the locus coeruleus and a later-maturing modulator involving spinal serotonergic neurons. 26 references. (Author abstract modified)

000596 Saari, Matti; Pappas, B. A. Nipissing University College, North Bay, Ontario, P1B 8L7, Canada **Behavioural effects of neonatal systemic 6-hydroxydopamine.** Neuropharmacology (Oxford). 17(10):863-871, 1978.

The behavioral and neurochemical effects of treatment with 6-hydroxydopamine (two subcutaneous injections, 50mcg/g each) on the first, fifth, or tenth day of life were investigated in Wistar rats. The treatments had no significant effect on brain dopamine, but norepinephrine (NE) assays during adulthood showed age-dependent effects, with the greatest effect observed in animals treated on the first postnatal day. Day 1 injections depleted forebrain and heart NE and elevated NE throughout the hindbrain. Less forebrain NE depletion was observed after the day 5 injections, and day 10 injections depleted only heart NE. Animals treated on day 1 showed no clonic decapitation convulsions, performed poorly on motor tests, and had reduced responses to punishment in food and water rewarded tasks; locomotor activity, startle response, and appetitively motivated learning and extinction were not affected. Animals treated on day 5 or 10 showed no behavioral deficits. Results suggest that neonatal lesions of the terminal fields of the locus coeruleus produce behavioral deficits on punishment tasks that induce conflict. 35 references. (Author abstract modified)

000597 Sanchez-Ramos, J. R; Schuster, C. R. University of Chicago, Department of Pharmacological and Physiological Sciences, Chicago, IL **Comparison of the effects of the intravenous and intracerebral routes of naloxone and diallylnormorphine administration in the morphine-dependent rhesus monkey.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1503-1512).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the com-

parative effects of intravenous (IV) and intracerebroventricular (ICV) administration of naloxone and diallylnormorphine (DANM) in morphine dependent rhesus monkeys were reported. Low pretreatment doses of naloxone resulted in equivalent changes in morphine self-administration, regardless of the route of pretreatment. By contrast, the IV and ICV administration of DANM, the quaternary derivative of nalorphine, provided a pharmacological differentiation of central and peripheral morphine receptors involved in mediating morphine self-administration. When DANM was administered by ICV injection, equivalent changes in morphine self-administration were observed at .001 of the dose given to produce the same effect by the IV route. 19 references. (Author abstract modified)

000598 Sanger, D. J. Department of Psychology, University College, P.O. Box 78, Cardiff, CF1 1XL, England **Nicotine and schedule-induced drinking in rats.** Pharmacology Biochemistry and Behavior. 8(4):343-346, 1978.

The effects of nicotine on schedule-induced water consumption were studied and an attempt was made to use schedule-induced drinking for the self-administration of nicotine in naive female hooded rats. In the first experiment, four rats developed schedule-induced water drinking during daily 1 hr sessions of a fixed-time 1-min schedule of food pellet delivery. Injections of a range of doses (0.25, 0.5, 1.0, 2.0and 4.0mg/kg) of nicotine hydrogen tartrate produced a dose-related attenuation of water intake. The higher doses also reduced the numbers of entries into the food tray in three rats, while the lowest dose consistently facilitated this behavior in the same animals. In the second experiment, schedule-induced water drinking developed in four other rats under a similar schedule. Substitution of nicotine solution (0.05 and 0.1mg/ml) for water reduced volumes of fluid consumed. However, schedule-induced drinking continued at a rate sufficient for the animals to ingest average doses of the nicotine salt of up to 8.5mg/kg. Schedule-induced drinking can be used successfully as a method of inducing self-administration of nicotine by rats. 12 references. (Author abstract modified)

000599 Satake, Nobuhiro. Laboratory of Sensory Sciences, University of Hawaii, Honolulu, HI 96822 **Task-specificity of the blocking action of puromycin on retention in goldfish.** Physiology & Behavior. 21(6):855-858, 1978.

The blocking action of puromycin on retention in gold fish trained to avoid shock in a shuttlebox was specific neither to the classical nor to the instrumental component of that training. Retention was poorer after immediate than after delayed injection of puromycin in classically conditioned shuttling with light as the conditioned stimulus and brief shock as the unconditioned stimulus and in instrumentally conditioned shuttling with termination of an unsignalled train of shocks as reward. Negative results obtained in a further series of instrumental experiments with target striking as the response and food as the reward suggest that the blocking action of puromycin on retention in goldfish may be specific to the effects of training with aversive stimuli. 10 references. (Author abstract modified)

000600 Satinder, K. Paul; Valliant, Paul M. Department of Psychology, Lakehead University, Thunder Bay, Ontario, Canada P7B5EI **Scopolamine interacts with reactions to cat and genotypic emotional reactivity in rat.** Pharmacology Biochemistry and Behavior. 9(4):421-424, 1978.

The effects of scopolamine hydrobromide in the presence or absence of a cat, and levels of emotional reactivity were investigated in two strains of rats selectively bred for high or low emotional reactivity (MR/Har/Lu and MNR/Har/Lu, respectively). In the presence of a cat, scopolamine decreased approach behavior and increased freezing in both genetic lines. In the absence of the cat, scopolamine had no effect on behavior of the nonreactive strain but increased approach and decreased freezing in the reactive strain. 8 references. (Author abstract modified)

000601 Schlemmer, R. Francis, Jr.; Jackson, J. Alan; Preston, Kenzie L.; Bederka, John P., Jr.; Garver, David L.; Davis, John M. Research Department, Illinois State Psychiatric Institute, 1601 West Taylor Street, Chicago, IL 60612 **Phencyclidine-induced stereotyped behavior in monkeys: antagonism by pimozide.** European Journal of Pharmacology (Amsterdam). 52(3/4):379-384, 1978.

Chronic administration of phencyclidine (PCP) produced stereotyped behavior in four female stumptail macaques within a stable social colony. A significant increase in the amount of stereotypy was observed during the second and third week of PCP treatment, compared to the first week. The dopamine receptor blocking agent pimozide antagonized the PCP stereotypy. Results are discussed in terms of dopamine mediation of these responses. 10 references. (Author abstract modified)

000602 Schwartz, Arthur S.; Woolf, Bobbie; Hedin, Chris; Marchok, Patricia. Division of Neurobiology, Barrow Neurological Institute of St. Joseph's Hospital and Medical Center, Phoenix, AZ 85013 **Dissociation of discrimination of skin warming from skin cooling by morphine in monkeys.** Brain Research (Amsterdam). 156(1):206-210, 1978.

The effects of intramuscular injections of morphine sulphate (1, 2, 5, or 10mg/kg) on discrimination of skin warming and skin cooling were investigated in three young female stump tail macaques. The discrimination of warming was significantly depressed by all the morphine doses used, while only the two larger doses disrupted discrimination of skin cooling. Results indicate that the sensation of warming, mediated mostly by C-fibers, is particularly sensitive to opiate administration. The data further suggest that the perception of dynamic warming and cooling in the primate is mediated by two different systems, rather than by one system that relies on the discharge characteristics of specific cold units. 20 references.

000603 Schwartz, Barry David. Tulane University **The effect of neonatal androgen and photoperiodicity on the reproductive capacity of the female golden hamster. (Ph.D. dissertation).** Dissertation Abstracts International. 39(3):1533-B, 1978. Ann Arbor, Univ. Microfilms No. 7816174. 82 p., 1978.

To study the effect of neonatal androgen and photoperiodicity on the reproductive capacity of the female golden hamster (Mesocricetus auratus), Ss were injected subcutaneously with oil, 1mcg or 10mcg testosterone propionate (TP) on day 4 and were reared from birth in rooms with either 14 hr light and 10 hr dark (LD 14:10), LD 12:12, or LD 6:18 photoperiods. Results reveal that the delayed anovulatory syndrome, found thus far only in the rat, could be induced in the hamster. However, for comparable dosages of neonatal TP, the time of appearance of the acyclic state as measured by changes in vaginal cytology is delayed for a much longer time in the hamster. In none of the statistical analyses was the interaction between the factors of neonatal treatment and photoperiod statistically significant. Thus, these two conditions probably modified different components in, or functions of, the neuroendocrine system in inducing vaginal acyclicity and reduced receptivity. (Journal abstract modified)

000604 Scraggs, P. R.; Ridley, R. M. Division of Psychiatry, Clinical Research Centre, Watford Road, Harrow, Middlesex HAl 3UJ, England **Behavioural effects of amphetamine in a small primate: relative potencies of the d- and l-isomers.** Psychopharmacology (Berlin). 59(3):243-245, 1978.

Acute administration of d-amphetamine (up to 8mg/kg) or l-amphetamine (up to 12mg/kg) in the marmoset resulted in a dose-dependent increase in small head movements (checking) and an almost total suppression of activities (including eating, grooming, playing, and social interaction), with little change in amount of movement. Severe stereotypy was seen at high doses of both isomers. The d-isomer had approximately twice the potency of the l-isomer in increasing checking behavior. 7 references. (Author abstract)

000605 Segal, Mark; Edelstein, Eleaszer L.; Dikstein, Shabtay; Hartzshtark, Avraham. Psychiatry Research Laboratory, Dept. of Psychiatry, Hadassah Medical Organization, Jerusalem, Israel **A method for quantifying lordosis behavior in the normal intact female rat: effect of para-methoxyphenylethylamine.** Research Communications in Psychology, Psychiatry and Behavior. 3(4):359-367, 1978.

The development of a male-female model in which stimulation of inhibition of lordosis could be quantified in the normal intact female rat is outlined, and preliminary observations with para-methoxyphenylethylamine (PMPEA) are reported. With the subliminal prime treated female model, it was determined that what appeared to be a biologically synergistic effect of PMPEA was actually the fact that PMPEA itself effectively increased the female lordotic response when administered alone (that is, with no hormone prime).

000606 Severs, Walter B.; Keil, Lanny C.; Klase, Patricia A. Department of Pharmacology, Milton S. Hershey Medical Center, Pennsylvania State University College of Medicine, Hershey, PA 17033 **Consummatory behavior and urine production after cerebroventricular injection of vasopressin and vasopressin antiserum.** European Journal of Pharmacology (Amsterdam). 51(4):389-396, 1978.

The effects of elevation and reduction of vasopressin in cerebrospinal fluid (CSF) on consummatory behavior (food and water intake), urine volume, and electrolyte excretion were investigated. Vasopressin or vasopressin antiserum was injected into a lateral cerebral ventricle of conscious male Sprague-Dawley rats that were normally hydrated, cellular dehydrated by sodium chloride loading, or made hypovolemic by polyethylene glycol. Elevation or reduction of vasopressin in CSF produced no consistent change in consummatory behavior, urine volume, or sodium and potassium excretion. These results indicate that vasopressin in CSF is not an absolute requirement for maintenance of hydration or for response to acute volume and osmotic stimuli. Although vasopressin effects on memory and learning may be related to salt/water adjustments within the brain, these findings show that they are not dependent on changes in whole body salt/water homeostasis. 20 references. (Author abstract modified)

000607 Severs, Walter B.; Klase, Patricia A. Department of Pharmacology, Milton S. Hershey Medical Center, Pennsylvania State College of Medicine, Hershey, PA 17033 **Drinking in water-deprived rats after combined central angiotensin receptor and converting enzyme blockade.** Pharmacology Biochemistry and Behavior. 9(2):259-260, 1978.

Adult male Sprague-Dawley rats were deprived of water for 48 hours prior to lateral cerebroventricular infusion of cerebrospinal fluid, the angiotensin-II receptor antagonist saralasin, the converting enzyme inhibitor SQ-20,881, or the combination of saralasin and SQ-20,881. No drug effect on drinking was observed. Results indicate that angiotensin-III is not required for water-deprivation drinking. 8 references. (Author abstract modified)

000608 Shah, Nandkumar S.; Hedden, Martha P. Ensor Foundation Research Laboratory, William S. Hall Psychiatric Institute, Columbia, SC 29202 **Behavioral effects and metabolic fate of N,N-dimethyltryptamine in mice pretreated with beta-diethylaminoethyl-diphenylpropylacetate (SKF 525-A), iproniazid and chlorpromazine.** Pharmacology Biochemistry and Behavior. 8(4):351-356, 1978.

Behavioral aspects and metabolic fate of NN-dimethyltryptamine (DMT) were studied in mice pretreated with SKF-525-A, iproniazid or chlorpromazine (CPZ). DMT at doses of 2.5, 10.0, and 25.0mg/kg produced several behavioral changes in a dose-related manner: inhibition of spontaneous locomotor movement, enhanced fright responses to sound stimuli, trembling, head twitching, incoordinated movements of hind legs, flat or extended tail and abnormal posture with the extension of hind legs. Pretreatment with iproniazid (153mg/kg; 4hr) but not SKF-525-A (50mg/kg; 1hr) prolonged the behavioral effects produced by 2.5mg/kg DMT while CPZ (15mg/kg; 0.5hr) completely abolished the responses induced by 25mg/kg DMT. Earlier behavioral effects generally coincided with the brain concentrations of DMT. Dose dependent increases with rapid uptake and disappearance in the brain, plasma and hepatic levels of DMT were measured with doses of 10 and 25mg/kg DMT. Iproniazid, but not SKF-525-A markedly enhanced tissue levels of DMT. It is concluded that DMT is metabolized chiefly by monoamine oxidase rather than by drug metabolizing hepatic microsomal enzymes and that DMT-induced behavioral effects are due to the parent compound rather than its metabolite. 44 references. (Author abstract)

000609 Shaywitz, Bennett A.; Pearson, David A. Laboratory of Developmental Neurobiology, Yale University of Medicine, New Haven, CT **Effects of phenobarbital on activity and learning in 6-hydroxydopamine treated rat pups.** Pharmacology Biochemistry and Behavior. 9(2):173-179, 1978.

The effects of phenobarbital on activity and cognitive performance were investigated in normal developing Sprague-Dawley rat pups and in littermates given intracisternal injections of 6-hydroxydopamine (6-OHDA) at 5 days of age. Phenobarbital was administered daily in an oral dose of 40mg/kg, beginning at 12 days of age. In normal rat pups, phenobarbital reduced activity at 19 days, but did not affect avoidance performance. In the 6-OHDA lesioned pups, phenobarbital reduced activity at 19 days, increased activity at 26 days of age, and significantly impaired both T-maze and shuttlebox performance. Phenobarbital concentrations at 35 days averaged 15.5mcg/ml in control pups and 20.2mcg/ml in 6-OHDA pups. Brain dopamine concentrations in 6-OHDA pups averaged 35.5% of littermate controls, and were not affected by phenobarbital. Results support the notion that phenobarbital administration adversely affects activity and learning in the developing rat. 35 references. (Author abstract modified)

000610 Silverman, Harvey J. Department of Psychology, University of California, Berkeley, CA 94720 **Failure of 2-deoxy-D-glucose to increase feeding in the golden hamster.** Physiology & Behavior. 21(6):859-864, 1978.

Injection of 750 or 1100mg/kg 2-deoxy-D-glucose (2-DG) failed to increase feeding in golden hamsters, compared to sham or sodium chloride injection. However, 2-DG did induce hyperphagia in Sprague-Dawley rats. The nonresponsiveness to 2-DG in hamsters is discussed in relation to previous findings that hamsters fail to increase food intake after a period of food deprivation (noncompensation). Some questions on the relation of 2-DG effects to glucopyruvic feeding were also examined with reference to the rat and hamster. 41 references. (Author abstract modified)

000611 Simon, Neal G.; Gandelman, Ronald. Department of Psychology, Rutgers University, New Brunswick, NJ 08903 **The estrogenic arousal of aggressive behavior in female mice.** Hormones and Behavior. 10(2):118-127, 1978.

Experiments were conducted to determine the conditions under which estrogen would promote male-like aggressive behavior in female mice. The results of the first experiment show that most females chronically exposed to testosterone propionate (TP) in adulthood fought, whereas females similarly treated with estradiol benzoate (EB) did not display aggression. Another experiment found that, when either TP or EB was administered on the day of birth, adult females displayed aggression in response to daily EB injections during adult life. Also, the potentiating effect of neonatal hormone exposure declined over the first 12 days postpartum, as 100% of the day 0, 75% of the day 6, and 0% of the day 12 and 18 TP treated females fought in response to daily injections of 40mcg of EB in adulthood. The final study showed that, under the test conditions employed, the failure of a chronic adult EB regimen to promote agression was not due to a competing tendency to display female sexual behavior. 29 references. (Author abstract)

000612 Slikker, William, Jr. University of California, Davis **A primate model of drug dependency with cocaine and thiamylal: a psychopharmacological and electrophysiological investigation. (Ph.D. dissertation).** Dissertation Abstracts International. 39(3):1235-B, 1978. Ann Arbor, Univ. M-films No. 7815519. 205 p., 1978.

One group of Macaca mulatta monkeys was trained to self-administer cocaine and then to discriminate between saline solution and varying concentrations of cocaine, while another was trained to self-administer thiamylal and to discriminate between saline solution and varying concentrations of thiamylal. With both groups, an intravenous stepwise gradient of the respective training agents was used to determine the minimal concentration per infusion to reinstate the self-administration behavior. Stable thresholds were maintained for over 6 months. In cocaine trained Ss, the ability of psychomotor stimulant and anorectic drugs to elicit self-administration behavior fell into three categories, and results suggest that-reinstatement of drug reinforced behavior is related to central, rather than the peripheral, pharmacodynamics of these agents. The relative potencies of the drugs closely parallels the known abuse liability of the compounds in man. In thiamylal-trained Ss, other barbiturates reinstated thiamylal self-administration behavior for response contingent saline infusions. The stimulants were inactive at doses that reinstated self-administration in the cocaine trained Ss. Spectral analysis of EEG recorded from the cortex and several deep structures showed significant differences between the two drug groups. (Journal abstract modified)

000613 Sloviter, Robert S.; Drust, Eugene G.; Connor, John D. Department of Pharmacology, Milton S. Hershey Medical Center, Hershey, PA 17033 **Evidence that serotonin mediates some behavioral effects of amphetamine.** Journal of Pharmacology and Experimental Therapeutics. 206(2):348-352, 1978.

The possibility that some of the behavioral effects of d-amphetamine are due to activation of serotonin (5-HT) receptors rather than catecholamine receptors was investigated in male Sprague-Dawley rats. The amphetamine syndrome (head weaving or tremor, forepaw padding, and splayed hindlimbs) was prevented by 5-HT depletion with 5,7-dihydroxytryptamine or p-chlorophenylalanine (pCPA), but not by catecholamine depletion with alpha-methyl-p-tyrosine. The degree of syndrome inhibition by pCPA was correlated with the extent of 5-HT depletion. Normal responsiveness to amphetamine in pCPA-treated rats was restored by 5-hydroxytryptophan, the precursor for 5-HT. Methylsergide, a 5-HT receptor blocker, prevented the amphetamine syndrome, while the catecholamine blockers pimozide and phenoxybenzamine were ineffective. Results suggest that the amphetamine behavioral syndrome is caused by activation of 5-HT receptors in the brain, probably by displacement of endogenous 5-HT. 12 references. (Author abstract modified)

000614 Sloviter, Robert S.; Drust, Eugene G.; Connor, John D. Department of Pharmacology, Milton S. Hershey Medical Center, Hershey, PA 17033 **Specificity of a rat behavioral model for serotonin receptor activation.** Journal of Pharmacology and Experimental Therapeutics. 206(2):339-347, 1978.

The specificity of a rat behavioral model for serotonin (5-HT) receptor activation, consisting of forepaw padding, head weaving or tremor, splayed hindlimbs, snake tail, salivation, and hyperpyrexia, was investigated. Depletion of catecholamines by alpha-methyl-p-tyrosine or depletion of 5-HT by p-chlorophenylalanine (pCPA) or 5,7-dihydroxytryptamine, did not prevent the behavioral syndrome caused by the 5-HT receptor agonist 5-methoxy-N,N-dimethyltryptamine (5-MeODMT) in male Sprague-Dawley rats. Pretretment with methysergide, but not phenoxybenzamine or pimozide, prevented the syndrome caused by 5-MeODMT. Conversely, 5-HT depletion prevented the syndrome caused by a monoamine oxidase inhibitor (MAOI) and levodopa, and the behavioral response was restored by 5-hydroxytryptophan in pCPA pretreated rats. Methysergide prevented the syndrome caused by MAOI and levodopa, but phenoxybenzamine or pimozide did not. Intraventricular 5-HT or dopamine also caused the behavioral syndrome after MAOI; pCPA pretreatment prevented the syndrome caused by dopamine but not by 5-HT. Results suggest that systemic levodopa or intraventricular dopamine produce the behavioral signs through 5-HT mechanisms and that endogenous catecholamine mechanisms are not involved directly in the cause or expression of the behavioral syndrome. 28 references. (Author abstract modified)

000615 Smith, Donald F. Central Laboratory, Psychiatric Hospital, DK-8240 Risskov, Denmark **Irritable aggression and open field behavior in rats given 2-phenylcyclopropylamines.** European Journal of Pharmacology (Amsterdam). 52(3/4):297-302, 1978.

Adult male Wistar rats were tested for shock-induced aggression, jump threshold, stereotypic movement, rearing, and ambulation 3-5 hours after intraperitoneal injection of a 2-phenylcyclopropylamine (59mcmol/kg). Shock-induced aggression was facilitated by trans-1-2-phenylcyclopropylamine (1-TPCP) and was suppressed by trans-d-2-phenylcyclopropylamine (d-TPCP). Neither drug affected jump threshold. A behavioral syndrome of increased stereotypic behavior of the serotonin dependent type, as well as decreased rearing and ambulation, occurred in rats given d-TPCP, trans-dl-2-phenylcyclopropylamine, 2-(4-chlorophenyl)-cyclopropylamine, and 2-(3,4-dichlorophenyl)-cyclopropylamine but not in rats given 1-TPCP, cis-dl-2-phenylcyclopropylamine, 2-(2-chlorophenyl)-cyclopropylamine, or 2-(2,5-dichloropheny)-cyclopropylamine. Results suggest that this behavioral syndrome depended in part on the absence of a chlorine substitution in the ortho position of the phenyl ring. The monoaminergic mechanisms involved in the irritable aggression produced by d-TPCP and 1-TPCP are discussed. 23 references. (Author abstract modified)

000616 Smith, James B. Worcester Foundation for Experimental Biology, Shrewsbury, MA 01545 **Effects of d-amphetamine and pentobarbital in combination with single or repeated daily injections of morphine in the pigeon.** Journal of Pharmacology and Experimental Therapeutics. 206(2):353-360, 1978.

The effects of d-amphetamine, pentobarbital, and morphine on keypecking in male White Carneaux pigeons under a multiple

fixed ratio (FR), fixed-interval (FI) schedule of food presentation were investigated. Pentobarbital and d-amphetamine increased the overall rate of FI responding, while morphine decreased FI responding. Morphine and d-amphetamine decreased FR responding, whereas pentobarbital increased FR responding. When d-amphetamine was combined with single doses of morphine, the joint effects were always predictable from the effects of each drug alone; rate decreases of morphine were attenuated if d-amphetamine alone had increased responding and were enhanced if d-amphetamine had decreased responding. The combined effects of pentobarbital and single doses of morphine were not always predictable from effects of each drug alone. For FI responding, rate decreases of morphine were not attenuated by rate increasing doses of pentobarbital. For FR responding, rate decreases of morphine were attenuated if pentobarbital alone had increased responding, but this attenuation differed with doses of pentobarbital that had similar effects when given alone. When d-amphetamine and pentobarbital were studied in morphine-tolerant animals, dose effects of d-amphetamine, but not of pentobarbital, were the same as when studied alone in nontolerant animals. 10 references. (Author abstract modified)

000617 Smith, James B. Worchester Foundation for Experimental Biology, Shrewsbury, MA 01545 **Effects of repeated injections of naltrexone on antagonism of rate decreases by morphine in the pigeon.** Pharmacology Biochemistry and Behavior. 9(2):265-267, 1978.

The effects of repeated administration of naltrexone on antagonism of the rate-decreasing effects of morphine on schedule-controlled responding was investigated in male White Carneaux pigeons. Responding was maintained under a multiple schedule of food presentation in which key pecks produced access to grain under a fixed-interval schedule in the presence of one stimulus and under a fixed-ratio schedule in the presence of another stimulus. Repeated daily injections of 1mg/kg naltrexone had no systematic effects on overall response rate during either schedule component, and naltrexone continued to antagonize rate decreases of periodic single injections of 10mg/kg morphine for 7 weeks. Tolerance did not occur to the antagonistic effects of naltrexone on rate decreases produced by morphine. 10 references. (Author abstract modified)

000618 Snapir, N.; Glick, Z. Department of Animal Science, Hebrew University of Jerusalem, Faculty of Agriculture, Rehovot, Israel **Cholecystokinin and meal size in the domestic fowl.** Physiology & Behavior. 21(6):1051-1052, 1978.

The effects of intraperitoneal injections of cholecystokinin (CCK), caerulein, and saline on food intake were investigated in White Leghorn/New Hampshire crossbred cocks trained to eat their entire daily food intake during 5 hours. No significant differences in food intake were found between saline-injected birds and those injected with CCK or caerulein. It is concluded that CCK does not play a role in the control of meal size in the fowl. 8 references. (Author abstract modified)

000619 Snyder, E. W.; Dustman, R. E.; Beck, E. C. Veterans Administration Hospital, Salt Lake City, UT 84148 **Sustained ingestion of methadone and the sleep of monkeys.** Psychopharmacology (Berlin). 60(1):29-34, 1978.

The sleep patterns of four stumptail monkeys were studied during a year of methadone maintenance and the 8 months following drug withdrawal. Rapid eye movement (REM) sleep was substantially decreased by methadone and gradually returned to predrug values over a 6- to 8-month period of maintenance. Measures of nonREM sleep and awakenings showed similar disruption, with no return to predrug values. These changes were not correlated with alterations in plasma methadone concentrations. REM sleep rebound occurred temporarily upon drug withdrawal, but no consistent sleep disruption was apparent during the subsequent 8 months. Results indicate that tolerance to the sleep disruptive effects of methadone is specific and incomplete and that extended REM rebound does not necessarily occur upon withdrawal. 41 references. (Author abstract modified)

000620 Sodersten, P.; Berge, O. G.; Hole, K. Department of Physiological Psychology, University of Bergen, Arstadveien 21, N-5000 Bergen, Norway **Effects of p-chloroamphetamine and 5,7-dihydroxytryptamine on the sexual behavior of gonadectomized male and female rats.** Pharmacology Biochemistry and Behavior. 9(4):499-508, 1978.

Treatment with the serotonin (5-HT) neurotoxins p-chloroamphetamine (PCA, two injections of 10mg/kg) or 5,7-dihydroxytryptamine (5,7-DHT, two intracerebral injections of 6mcg) stimulated the display of all aspects of sexual behavior in castrated male Wistar rats and increased behavioral sensitivity to a low level of testosterone (T) stimulation. The reduction of (3H)5-HT uptake after PCA treatment was more pronounced in the cortex than in the hypothalamus. The 5,7-DHT treatment reduced (3H)5-HT uptake in the septum, hippocampus, amygdala, hypothalamus, and cortex, but these biochemical effects could not be correlated with the behavioral effects of 5,7-DHT. Since the behavioral effect of PCA appeared to be stronger than that of 5,7-DHT, the 5-HT neurotoxins may exert their effect on sexual behavior in forebrain structures rather than in the hypothalamus. PCA treatment had a very slight effect on mounting behavior, 5,7-DHT stimulated the display of mounts and intromission patterns by ovariectomized rats given no hormone treatment. Neither PCA nor 5,7-DHT had any effect on lordosis behavior tested before and after treatment with estradiol benzoate alone or in combination with progesterone. Results suggest that 5-HT is involved in the control by T of sexual behavior in male rats but argue against a role of 5-HT in the neural control of lordosis behavior. 56 references. (Author abstract modified)

000621 Sprague, G. L.; Takemori, A. E. Department of Pharmacology, University of Minnesota, 435 Delaware Street, Minneapolis, MN 55455 **Enhancement of morphine analgesia and brain levels by methamphetamine in mice.** Journal of Pharmacology and Experimental Therapeutics. 207(2):485-493, 1978.

Methamphetamine and morphine were approximately equipotent in producing analgesia in male Swiss-Webster mice, using the tail flick assay. The median effective dose for morphine analgesia was significantly reduced when 3.2mg/kg methamphetamine was given 5 or 60 minutes before morphine. Methamphetamine pretreatment increased the peak effect, but did not alter the duration of morphine analgesia. Enhancement of morphine analgesia was apparent when methamphetamine was given up to 60 minutes before morphine and did not coincide with analgesia produced by methamphetamine alone. Brain levels of morphine were significantly higher in methamphetamine-pretreated mice than in saline controls at times when enhanced analgesia was observed. Methamphetamine pretreatment also enhanced methadone analgesia, but it had no effect on methadone brain levels. 40 references. (Author abstract modified)

000622 Staudacherova, D.; Mares, P.; Trojan, S. Institute of Physiology, Czechoslovak Academy of Sciences, 142 20 Prague 4-Krc, Czechoslovakia **Ontogenetic development of pentobarbital-induced EEG pattern and sleeping time in rats.** Activitas Nervosa Superior (Praha). 20(1):19-20, 1978.

In a paper read at the 13th Interdisciplinary Conference of Experimental and Clinical Study of Higher Nervous Functions, held at Piestany, Czechoslovakia during October 1976, the onto-

genetic development of pentobarbital-induced EEG pattern and sleeping time in rats is described. A group of 140 male rats aged from 9 days to adulthood was used for the estimation of sleeping time after i.p. injection of pentobarbital. Latency to the onset of sleep and total sleep time were significantly related to age. Results of electrocorticograms of a second group of pentobarbital-treated rats also support the finding of a high sensitivity of immature brain to barbiturates. 2 references.

000623 Stevens, Robin; Goldstein, Ralph. Psychology Department, Nottingham University, University Park, Nottingham NG7 2RD, England **Effects of neonatal testosterone and progesterone on open-field behaviour in the rat.** Quarterly Journal of Experimental Psychology (Cambridge). 30(1):157-166, 1978.

The effects of neonatally administered sex hormones on ambulation, rearing, grooming, and defecation behavior in male and female rats were investigated. A total of 72 Wistar albino rats treated on the day of birth with progesterone (500 mcg) or testosterone propionate (200 mcg) or a placebo were tested in the open field on 4 consecutive days at 45 and 85 days of age. Averages across treatments showed that females ambulated more and reared more than males at both ages, that they groomed more than males at 45 days of age, and defecated less at 85 days of age. Progesterone treatment significantly reduced defecation in males at 45 days of age, and reduced grooming in both sexes. At 85 days of age progesterone significantly increased activity in females. Testosterone-treated animals of both sexes groomed significantly less than same sex controls at 45 days of age, whereas at 85 days of age activity scores were significantly reduced only in females. Early postnatal treatment with progesterone appeared to feminize male rats, and testosterone to masculinize female rats. Both hormones also altered the behavior of opposite-sexed rats, indicating that male rats may be further masculinized by exogenous testosterone and female rats further feminized by progesterone. It is suggested that progesterone may have acted as an antiandrogenic agent by blocking gonadal and adrenal androgens in males and adrenal androgens in females. 32 references. (Author abstract modified)

000624 Stolerman, I. P.; D'Mello, G. D. MRC Neuropharmacology Unit, Medical School, Birmingham B15 2TJ, England **Amphetamine-induced hypodipsia and its implications for conditioned taste aversion in rats.** Pharmacology Biochemistry and Behavior. 8(4):333-338, 1978.

The effects on water intake of a range of doses of amphetamine and of several related compounds were examined in male hooded rats in an attempt to correlate their known potencies in taste aversion experiments with their hypodipsic potencies. ()-Amphetamine was more potent than (-)-amphetamine in suppressing water intake but under similar experimental conditions, the isomers were equipotent in the conditioning of taste aversions. Methamphetamine and p-chloromethamphetamine were equipotent in suppressing water intake, but the latter was a more potent agent for conditioning taste aversions. Fenfluramine produced taste aversions at doses well below those which suppressed water intake. It is concluded that the ability of the drugs to induce taste aversion was not related to their unconditioned, hypodipsic effects. However, when drugs with different durations of action are compared for anorexic or hypodipsic potency, the outcome can be greatly influenced by the time over which measurements are made. 29 references. (Author abstract)

000625 Stolerman, I. P.; Pilcher, C. W. T.; D'Mello, G. D. MRC Neuropharmacology Unit, Medical School, Birmingham B15 2TJ, England **Stereospecific aversive property of narcotic antagonists in morphine-free rats.** Life Sciences. 22(19):1755-1762, 1978.

A conditioning technique that can be used to demonstrate a behavioral effect of moderate doses of naloxone in the rat and that attempts to validate interpretations in terms of opioid receptor blockade is described. Studies of taste aversions conditioned with narcotic antagonists supported the following hypothesis: if endogenous, morphine-like substances have physiological functions, narcotic antagonists should have effects in vivo even in the absence of exogenous, narcotic agonists. Rats drank smaller amounts of distinctively flavored solutions when their consumption on previous occasions preceded injections of naloxone, naltrexone, or tartrates. Stereoisomers which were inactive as narcotic antagonists did not induce significant taste aversions. It is suggested that the consistency and stereospecificity of aversion with the antagonists gives some support to interpretations in terms of antagonist actions at receptors for endogenous opioids. 37 references. (Author abstract modified)

000626 Stretch, R. no address **Workshop 2: behavioral and pharmacological methods of modifying drug-reinforced responding.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1473-1533).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, Workshop 2 focused on behavioral and pharmacological methods of modifying drug-reinforced responding. Paper topics included: pharmacological modification of cocaine and apomorphine self-administration in the squirrel monkey; chlorpromazine and haloperiodol induced changes in behavioral effects of cocaine and amphetamine; effects of intravenous and intracerebral administration of naloxone and diallylnormorphine in morphine-dependent rhesus monkeys; and discrete trial control of morphine self-injection behavior in squirrel monkeys. The suppression of intravenous drug self-administration by punishment in monkeys was also reported.

000627 Stricker, Edward M. Department of Psychology, University of Pittsburgh, Pittsburgh, PA 15260 **Excessive drinking by rats with septal lesions during hypeovolemia induced by subcutaneous colloid treatment.** Physiology & Behavior. 21(6):905-907, 1978.

Male Sprague-Dawley rats with septal lesions consumed much more water than control rats during a 24-hour test after subcutaneous administration of polyethylene glycol solution. However, the lesioned animals drank normally during the first 8 hours of the test. Results are discussed in relation to the effects of this treatment on plasma renin and angiotensin, and it is concluded that angiotensin usually contributes little as a dipsogen to thirst. 11 references. (Author abstract modified)

000628 Tanger, Henk J.; Vanwersch, Raymond A. P.; Wolthuis, Otto L. Medical Biological Laboratory TNO, 139, Lange Kleiweg, 2280 AA Rijswijk ZH, Netherlands **Automated TV-based system for open field studies: effects of methamphetamine.** Pharmacology Biochemistry and Behavior. 9(4):555-557, 1978.

A method for automatically monitoring the open-field behavior of rats is described. A television camera is used to obtain the X and Y coordinates of the rat's position, which is printed on an X/Y recorder to obtain the running pattern. The X and Y coordinates are also punched on paper tape at 1-second intervals. Computer processing of the tape yields the distance run, a frequency distribution of speeds, the number of entries into an inner field, the time spent in an inner field, and the number of changes in corner position. In a test of this system, 1 and 2mg/kg amphetamine enhanced all parameters measured, except changes in corner position. 6 references. (Author abstract modified)

000629 Taylor, Maxwell. no address **Rats and dietary amino acids.** Bulletin of the British Psychological Society (London). 31(May):190, 1978.

A summary is provided of a paper on dietary amino acids in rats, presented at the 1978 Annual Conference of the British Psychological Society. Changes in dietary amino acid intake can produce related changes in brain amines in rats. Behavioral effects of diets high in tryptophan, methionine, and lysine were studied after injections of 10mg/kg d-amphetamine. The amount of amphetamine-induced stereotyped behavior observed varied as a function of the dietary additions, with methionine showing the greatest difference from controls and lysine the least. This evidence extends knowledge of the effects of diet upon behavior, and extends the notion of dietary modification of drug action. (Author abstract modified)

000630 Thornhill, J. A.; Hirst, M.; Gowdey, C. W. Department of Pharmacology, Health Science Centre, University of Western Ontario, London, Ontario, N6A5C1, Canada **Tolerance and evidence of physical dependence to daily codeine injections in the rat.** Pharmacology Biochemistry and Behavior. 9(4):433-438, 1978.

Core temperatures and acquisition of food pellets on a continuous reinforcement schedule were monitored in male Sprague-Dawley rats given saline for 5 days before and 5 days after 10 daily subcutaneous injections of codeine phosphate (200mg/kg). After the first codeine injection, rats were immobile and slightly catatonic, breathed shallowly, and had elevated core temperatures, loss of body weight, and inhibition of feeding activity. As injections of codeine were repeated, the initial depressant signs decreased and the period of inhibited feeding was followed by prolonged postinjection bouts of feeding activity. Core temperatures remained elevated during this phase of drug-induced feeding activity. Mean body weight and 24-hour food intake remained below control levels over the 10-day codeine period as diurnal feeding patterns became reversed. On the first withdrawal day, core temperatures declined and feeding patterns altered as the rats lost body weight and became hyperirritable. As withdrawal continued, core temperature and feeding patterns returned to normal, body weights increased, and hyperirritability subsided. These alterations in diurnal feeding and temperature demonstrate the development of tolerance and physical dependence to daily injections of codeine. 34 references. (Author abstract modified)

000631 Thornton, E. W.; Goudie, A. J. Department of Psychology, University of Liverpool, P.O. Box 147, Eleanor Rathbone Building, Liverpool L69 3BX, England **Evidence for the role of serotonin in the inhibition of specific motor responses.** Psychopharmacology (Berlin). 60(1):73-79, 1978.

Depletion of brain serotonin by treatment with p-chlorophenylalanine (p-CPA, 200mg/kg) or by lesions of the medial raphe nucleus impaired the acquisition of a step off passive avoidance response in female Wistar rats. Treatment with p-CPA also impaired response inhibition during an omission training schedule. Results support a general role for serotonin in withholding specific instrumental motor actions and tentatively support the suggestion that various types of response inhibition are mediated by different neurochemical systems. 43 references. (Author abstract modified)

000632 Tinklenberg, Jared R.; Gillin, J. Christian; Murphy, Greer M., Jr.; Staub, Richard; Wyatt, Richard Jed. Psychiatry Service 116A3, Veterans Administration Hospital, 3801 Miranda Avenue, Palo Alto, CA 94304 **The effects of phenylethylamine in rhesus monkeys.** American Journal of Psychiatry. 135(5):576-578, 1978.

A quantitative assessment of the effects of phenylethylamine (PEA) on the behavior of rhesus monkeys is described. In controlled experiments rhesus monkeys that had received PEA demonstrated behavior similar to that reported after the administration of amphetamines, except that tolerance to PEA did not develop. These findings are of psychiatric interest because PEA is found in the human body and is a specific substrate for type-B MAO, which is found in decreased quantities in certain schizophrenic patients. 17 references. (Author abstract modified)

000633 Todd, Janet W.; Kesner, Raymond P. Department of Psychology, University of Utah, Salt Lake City, UT 84112 **Effects of posttraining injection of cholinergic agonists and antagonists into the amygdala on retention of passive avoidance training in rats.** Journal of Comparative and Physiological Psychology. 92(5):958-968, 1978.

Rats were given a single footshock while licking a water tube and tested 24 hr later for retention of the footshock experience. A single bilateral injection of a subseizure dose of physostigmine into the amygdala applied immediately, but not 18 hr, after the footshock impaired retention. This effect appeared to be somewhat localized, as physostigmine injected into the hippocampus or lateral ventricles did not disrupt retention. Conversely, a subseizure dose of atropine sulfate into the amygdala, given immediately or 18 hr after the footshock did not impair retention. Atropine injected concurrently with physostigmine into the same amygdaloid loci counteracted a potential physostigmine-induced retention deficit. Injection of carbachol into the amygdala also impaired retention; however, carbachol precipitated seizures and possibly exerted proactive consequences on performance. The time dependent nature of the deficit following physostigmine is consistent with the view that injection of cholinergic agonists into the amygdala disrupts memory for the footshock experience. 36 references. (Author abstract)

000634 Tortella, Frank C.; Moreton, J. Edward; Khazan, Naim. Department of Pharmacology, School of Medicine, Temple University, Philadelphia, PA **Electroencephalographic and behavioral effects of D-ala2-methionine-enkephalinamide and morphine in the rat.** Journal of Pharmacology and Experimental Therapeutics. 206(3):636-642, 1978.

The effects of intraventricular administration of D-ala2-methionine-enkephalinamide (D-enkephalin, 10-240mcg) or morphine (2.5-40mcg) on behavior and on direct and voltage integrated EEG were investigated in female Sprague-Dawley rats. Morphine and D-enkephalin produced EEG high amplitude, slow frequency waves which were associated with behavioral stupor. The behavioral depressant effect was followed by behavioral arousal and EEG activation. The EEG voltage output during morphine or D-enkephalin-induced EEG slow wave activity was dose-dependent and was correlated with the behavioral state of the rat. D-enkephalin was less potent and slower acting than morphine, but produced a greater maximal response with respect to increasing the EEG voltage output. The effects of D-enkephalin and morphine were antagonized by subcutaneous pretreatment with 10mg/kg naloxone. However, intraventricular injection of naloxone or water had no effect on the EEG or behavior. The demonstrated difference in maximal EEG response to morphine and D-enkephalin suggests that heterogenous opiate receptors in the brain may mediate their effects. 38 references. (Author abstract modified)

000635 Toszeghi, Peter; Tobler, Irene; Borbely, Alexander A. Institute of Pharmacology, University of Zurich, CH-8006 Zurich, Switzerland **Cerebral ventricular infusion of excess calcium in the rat: effects on sleep states, behavior and cortical EEG.** European Journal of Pharmacology (Amsterdam). 51(4):407-416, 1978.

The sleep and behavior of male Sprague-Dawley/Ivanovas rats were recorded during cerebroventricular infusion of artificial cerebrospinal fluid (aCSF) containing regular or excess concentrations of calcium. Three types of aCSF, with varying ionic compositions, were used for control infusions. Depending on the ionic composition of the aCSF, paradoxical sleep (PS) was reduced by 6-52% during a 1-hour infusion period, but total amount of sleep was not altered. The depression of PS by aCSF could be prevented by increasing the concentration of calcium in the infusate by a factor of 2-5. Infusions of high concentrations of calcium (9.1-54.6mM) caused feeding and wet dog shakes. A slow wave cortical EEG pattern prevailed during feeding elicited by infusion of excess calcium or by systemic administration of a small dose of pentobarbital. It is concluded that the ionic composition of the CSF may selectively influence the occurrence of a sleep state and that calcium-induced feeding may be related to a covert sedative action of this cation. 30 references. (Author abstract modified)

000636 Tricklebank, M. D.; Smart, J. L.; Bloxam, D. L.; Curzon, G. Department of Neurochemistry, Institute of Neurology Laboratories, 33, John Mews, London WC1N 2NS, England **Effects of chronic experimental liver dysfunction and L-tryptophan on behaviour in the rat.** Pharmacology Biochemistry and Behavior. 9(2):181-189, 1978.

Male Sprague-Dawley rats with chronic experimental portocaval anastomosis showed diminished activity in the home cage, during habituation in red light to an observation box, and during exposure in white light to an open-field. Food intake and responsiveness to electric shock were also decreased. However, an abnormally high frequency of social activity was observed when anastomosed rats were paired after being caged singly for 3 weeks. Sham-operated rats interacted more with the liver-damaged rats than with other sham-operated animals. Anastomosis also raised brain concentrations of tryptophan, 5-hydroxytryptamine, and 5-hydroxyindoleacetic acid. Administration of tryptophan to sham-operated animals increased shock threshold and decreased ambulation in an open-field. Results suggest that changes in brain tryptophan metabolism may partially account for the behavioral abnormalities seen in the anastomosed rats. 44 references. (Author abstract modified)

000637 Ungerer, A.; Schuber, F.; Chauvin, R. Laboratoire de Psychophysiologie, 7, rue de l'Universite, F-67000 Strasbourg, France **A factor isolated from Datura stramonium that affects learning retention in mice.** Behavioral Biology. 24(3):349-363, 1978.

A water-soluble fraction, devoid of alkaloids, was isolated from Datura stramonium (leaves and seeds), and the effects of this extract on learning retention in mice was observed. This fraction greatly impaired retention of discriminated avoidance learning, two-way active avoidance learning, and a food-reinforced instrumental learning. The retention impairment induced by the Datura extract in these learning tasks was not due to an effect on spontaneous locomotor activity, nor to changes in the emotional reactivity of the animals. Preliminary chemical analysis suggests that the active principle of the Datura extract may be a small peptide. It is suggested that this active principle affects some memory processes. 25 references. (Author abstract modified)

000638 Urbain, Cathleen Poling, Alan; Millam, James; Thompson, Travis. Department of Psychology, University of Minnesota, Elliott Hall, Minneapolis, MN 55455 **d-Amphetamine and fixed-interval performance: effects of operant history.** Journal of the Experimental Analysis of Behavior. 29(3):385-392, 1978.

The influence of operant performance history on the effects of d-amphetamine upon fixed-interval performance in rats was investigated. Rats were exposed to two different reinforcement schedules. The animals exposed to fixed-ratio 40 schedules lever pressed at higher rates under a fixed-interval schedule than did those exposed to interresponse times greater than 11 seconds. Administration of d-amphetamine decreased the lever-pressing behavior of the former group and increased that of the latter. It is concluded that control response rate under the fixed-interval schedule is the primary determinant of the relative effects of d-amphetamine. 30 references. (Author abstract modified)

000639 van der Kooy, Derek; Fibiger, Hans C.; Phillips, Anthony G. Department of Psychology, University of British Columbia, Vancouver, British Columbia V6T 1W5, Canada **An analysis of dorsal and median raphe self-stimulation: effects of para-chlorophenylalanine.** Pharmacology Biochemistry and Behavior. 8(4):441-445, 1978.

The role of serotonergic systems in intracranial self-stimulation (ICSS) of the dorsal and median raphe nuclei of Wistar rats was investigated. Intragastric administration of 400mg/kg of parachlorophenylalanine (PCPA) depressed ICSS rates in the group with dorsal raphe electrode placements over a similar time course to the depletion of brain serotonin which results from PCPA treatment. An intrasessional analysis of these behavioral changes on the fourth day after PCPA revealed that dorsal raphe ICSS was depressed over both halves of the 2-hr test session, whereas a significant depression in median raphe ICSS occurred only in the last hr of the session. The data from these studies suggest that brain serotonin systems contribute to the phenomenon of brain stimulation reward in the dorsal and median raphe nuclei. The involvement of multiple neurochemical substrates of brain stimulation reward is discussed. 32 references. (Author abstract)

000640 van der Kooy, Derek; Schiff, Bernard B.; Steele, Donna. Department of Psychology, University of Toronto, Toronto, Ontario M5S 1A1, Canada **Response-dependent effects of morphine on reinforcing lateral hypothalmic self-stimulation.** Psychopharmacology (Berlin). 58(1):63-67, 1978.

The effects of morphine (10 mg/kg) on intracranial self-stimulation in 10 male Wistar rats were studied in three separate experiments requiring different types of responses. Self-stimulation was depressed in a test of rate of bar-pressing, to a lesser extent in a test of rate of wall-pressing in which a wider range of movements were reinforced, but not in a shuttlebox, with brain stimulation continuously available on one side of the box. This response dependency suggests that the depressive effect of morphine on bar-pressing for lateral hypothalamic stimulation reflects a performance deficit rather than an effect on the reinforcing value of the stimulation. The various interpretations for the increased durations of brain stimulation accepted by the animals in the shuttlebox while under morphine are discussed. 20 references. (Author abstract modified)

000641 Van Ree, Jan M.; Niesink, Raymond J. M. Rudolf Magnus Institute, Department of Pharmacology, Medical Faculty, School of Medicine, Vondellaan 6, Utrecht, The Netherlands **Pituitary-adrenal axis and oral morphine consumption in rats.** Pharmacology Biochemistry and Behavior. 9(4):493-498, 1978.

Removal of the pituitary gland suppressed oral morphine and quinine intake in male Wistar rats. Experiments measuring oral intake of solutions containing graded concentrations of morphine or quinine showed that the detection acuity for bitter taste was changed in hypophysectomized (HYPOX) animals. Treatment of these rats with the adrenocorticotropic hormone fragment 1-24 (ACTH1-24) restored oral morphine intake towards

that of intact rats. Morphine consumption in HYPOX rats was not affected by administration of ACTH4-10 or ACTH11-24, but was normalized by treatment with corticosterone. It is concluded that HYPOX animals refuse morphine solution as a result of an altered threshold for bitter taste caused by a diminished release of corticosteroids. 19 references. (Author abstract modified)

000642 Waddington, J. L. Division of Psychiatry, Clinical Research Centre, Harrow, Middlesex HA1 3UJ, England **Rotational behavior and striatal dopamine metabolism following unilateral activation of nigral GABA mechanisms: GABA-like modulation of dopaminergic and non-dopaminergic neurons in rat substantia nigra.** British Journal of Pharmacology (London). 63(2):384, 1978.

At the March 1978 meeting of the British Pharmacological Society in Guildford, England, a study of the interaction of gamma-aminobutyric acid (GABA) and dopamine (DA) in the substantia nigra was reported. Concentrations of DA and the DA metabolites dihydroxyphenylacetic acid (DOPAC) and homovanillic acid (HVA) in the striatum were compared with rotational behavior measures, following unilateral activation of nigral GABA mechanisms in male Sprague-Dawley rats. Unilateral injections of the GABA agonist muscimol and the GABA derivative baclofen into the substantia nigra induced a strong dose-related contralateral rotational response. Increases in striatal DA and DOPAC but not of HVA were observed in the muscimol-injected hemisphere. The rotational response induced by muscimol was only weakly attenuated by the DA agonist, haloperidol. Results are consistent with GABA-like inhibition of both dopaminergic and nondopaminergic neurons in the substantia nigra. 8 references. (Author abstract modified)

000643 Waddington, John L. Division of Psychiatry, MRC Clinical Research Centre, Harrow, Middlesex HA1 3UJ, England **Behavioural evidence for GABAergic activity of the benzodiazepine flurazepam.** European Journal of Pharmacology (Amsterdam). 51(4):417-422, 1978.

Unilateral intranigral injection of flurazepam mimicked the effects of the gamma-aminobutyric acid (GABA) agonist muscimol and the GABA analogue baclofen by inducing a dose-related contralateral rotation in male Sprague-Dawley rats. This response was anatomically associated with the GABA-rich zona reticulata of the substantia nigra and was attenuated by the GABA antagonist picrotoxin, but not by the dopamine antagonist haloperidol or by destruction of the ipsilateral dopamine pathway with 6-hydroxydopamine. These results suggest that flurazepam may indirectly enhance GABA transmission at synapses with receptors located on nigral nondopaminergic neurons controlling postural asymmetry. 35 references. (Author abstract modified)

000644 Wallis, David I.; Williams, Ceri; Wali, Fadhil A. Department of Physiology, University College, P.O. Box 78, Cardiff CF1 1XL, Wales **The effect of 5-hydroxytryptamine and hexamethonium on post-train facilitation in the superior cervical ganglion.** European Journal of Pharmacology (Amsterdam). 52(1):17-25, 1978.

The effects of 5-hydroxytryptamine (5-HT) on posttrain facilitation (F) in the rabbit superior cervical ganglion were compared with those of the ganglion blocking agent hexamethonium. In concentrations of 0.2, 1, or 10mcM, 5-HT caused a 12-30% reduction in the amplitude of the unconditioned response (U) and increased F by 31-153%, with a consistent decrease in subliminal fringe (SF) magnitude. Hexamethonium (50 or 250mcM) produced changes in F in marked contrast to those of 5-HT. As U declined in amplitude, SF and F values initially lay close to the proportional fringe paradigm (SF declined); as the block proceeded, values lay between the proportional and constant fringe paradigms. Preliminary experiments with angiotensin indicated it increased U amplitude, while SF and F values lay close to the constant fringe paradigm. Results suggest a complex mode of action of 5-HT; the increase in posttrain F may indicate a modulatory action on transmitter release. 11 references. (Author abstract modified)

000645 Wallnau, Larry B.; Gallup, Gordon G., Jr. Department of Psychology, State University College, Brockport, NY 14420 **Serotonergic and electric shock effects on tonic immobility: evidence for independent systems.** Physiology & Behavior. 21(6):869-872, 1978.

The involvement of central serotonergic mechanisms in the effects of electric shock was investigated in Production Red chickens (Gallus gallus). Pretreatment with p-chlorophenylalanine (PCPA), which depletes brain 5-hydroxytryptamine, and maintenance on a tryptophan-free diet both failed to affect the potentiation of tonic immobility produced by different intensities of shock. Pretreatment with PCPA had no overall behavioral effect, while tryptophan depletion reduced the duration of immobility. 41 references. (Author abstract modified)

000646 Wauquier, A.; Melis, W.; Niemegeers, C. J. E.; Janssen, P. A. J. Department of Pharmacology, Janssen Pharmaceutica Research Laboratories, B-2340 Beerse, Belgium **A putative multipartite model of haloperidol interaction in apomorphine-disturbed behavior of the dog.** Psychopharmacololgy (Berlin). 59(3):255-258, 1978.

The interaction between various doses of apomorphine and haloperidol on intracranial self-stimulation in Labrador dogs was studied, using a paradigm in which reinforcing brain stimulation was controlled by a discriminative auditory stimulus. Reinforced lever-pressing was decreased by low doses of apomorphine and completely suppressed by stereotypogenic doses. At various doses of apomorphine, low doses of haloperidol either increased response inhibition by enhancing stereotypy or increased lever-pressing by reducing stereotypy while concomitantly increasing the number of nonreinforced responses. Intermediate to relatively high doses of haloperidol antagonized stereotypy and the response inhibition produced by apomorphine. High doses of haloperidol antagonized stereotypy but also suppressed self-stimulation. Thus, haloperidol is able to restore performance capability, disturbed reinforcing stimulus control, and disturbed discriminative stimulus control. 14 references. (Author abstract)

000647 Wetzel, W.; Simonov, P. V. Institute of Pharmacology and Toxicology, Medical Academy, DDR-301 Magdeburg, German Democratic Republic **Avoidance reaction to painful stimulation of another rat: effect of methylglucamine orotate.** Pharmacology Biochemistry and Behavior. 9(4):401-404, 1978.

The effect of methylglucamine orotate (225mg/kg/day, injected i.p. 1 hour before training sessions) on the acquisition and extinction of a conditioned avoidance reaction to painful stimulation of another animal was studied in male Wistar rats. The orotate-treated rats showed accelerated development of the avoidance reaction during 5 days of training. Extinction of the reaction was also delayed in the orotate-treated animals. These results provide further evidence for the improvement of long-term memory by orotic acid. 20 references. (Author abstract modified)

000648 Whalen, Richard E.; Etgen, Anne M. Department of Psychobiology, University of California, Irvine, CA 92717 **Masculinization and defeminization induced in female hamsters by**

neonatal treatment with estradiol benzoate and RU-2858. Hormones and Behavior. 10(2):170-177, 1978.

To test the hypothesis that masculinization may be androgen dependent and defeminization estrogen dependent, newborn female hamsters were administered 50-2000ng of estradiol benzoate (EB), 0.05-50ng of the synthetic estrogen RU-2858, or 1000ng of testosterone propionate (TP). All three agents facilitated the display of male type mounting responses in adulthood. A dose of 500ng of EB was most potent in this regard, although significant masculinization was induced by 50ng of EB and 0.05ng of RU-2858 as well as by TP. TP did not inhibit adult lordotic behavior. Lordosis durations were reduced in a dose dependent manner by EB, whereas the dose response curve for RU-2858-induced defeminization was found to be nonlinear. The observation that picogram to nanogram amounts of estrogen can masculinize is consistent with the aromatization hypothesis of sexual differentiation. 17 references. (Author abstract)

000649 Wharton, Walker; McMillan, D. E.; Edwards, Joseph S.; Edwards, Diane DeA. Department of Pharmacology, University of North Carolina, Swing Building 217 H, Chapel Hill, NC 27514 **The rate-dependent effects of d-amphetamine on metastable avoidance behavior in rats.** Psychological Record. 28(1):41-48, 1978.

Two experiments were conducted to examine the rate-dependent effects of d-amphetamine on metastable avoidance behavior in rats (n=3, n=3). The rate of avoidance responding and the shock rate maintained under a continuous escape avoidance schedule was found to be a function of the response/shock interval as well as previous exposure to other response/shock intervals. At long intervals, avoidance rates were increased and shock rates were decreased after exposure to shorter intervals. Low avoidance rates showed dose dependent increases after d-amphetamine administration. Higher avoidance rates, produced after exposure to short response/shock intervals, showed only moderate increases at low dosages and dose dependent decreases at higher dosages of d-amphetamine. Results suggest that the effects of d-amphetamine on avoidance behaviors at a particular response/shock interval can be influenced by the behavioral history of the animal through rate-dependent mechanisms. (Author abstract modified)

000650 White, B. C.; Simpson, Carol C.; Adams, J. E.; Harkins, D., Jr. Centre College of Kentucky, Danville, KY 40422 **Monoamine synthesis and caffeine-induced locomotor activity.** Neuropharmacology (Oxford). 17(7):511-513, 1978.

Alpha-methyltyrosine (AMT) and para-chlorophenylalanine (p-CPA) were used to investigate the effects of inhibition of catecholamine and serotonin synthesis, respectively, on caffeine-induced activity in male Sprague-Dawley rats. Caffeine-induced activity was prevented by AMT and restored by apparent replacement of catecholamine synthesis by L-DOPA treatment. Caffeine-induced activity was enhanced by p-CPA pretreatment, but AMT attenuated the p-CPA enhancement. 10 references. (Author abstract modified)

000651 Widerlov, E.; Lewander, T. Psychiatric Research Center, University of Uppsala, Ulleraker Hospital, S750 17 Uppsala, Sweden **Tolerance to alpha-methyl-p-tyrosine in rats: studies on the antagonism of amphetamine-induced motor activity and excitatory behavior.** Psychopharmacology (Berlin). 60(1):41-45, 1978.

Amphetamine-induced motor activity and excitatory behavior were examined in male Sprague-Dawley rats treated chronically with alpha-methyl-p-tyrosine methyl-ester hydrochloride (aMT) twice daily for 0 to 14 days. A single dose of aMT markedly reduced the activity response after amphetamine. Tolerance to the amphetamine antagonistic effect of aMT was apparent after 1 to 3 days of aMT treatment and was maximal after 7 to 14 days. The pattern of the amphetamine response was monophasic in control rats and biphasic in aMT tolerant rats, with an early (0 to 1 hours) and late (2 to 4 hours) peak of motor activity. The late peak appeared within 3 days while the early peak appeared after 7 days of aMT treatment. It is concluded that tolerance to the amphetamine antagonistic action of aMT is incomplete and involves more than one mechanism. 20 references. (Author abstract modified)

000652 Widerlov, E.; Lewander, T. Psychiatric Research Center, University of Uppsala, Ulleraker Hospital, S-750 17 Uppsala, Sweden **The relationship between amphetamine antagonism and depletion of brain catecholamines by alpha-methyl-p-tyrosine in rats.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(2):125-134, 1978.

The time course and the dose response relationship for the antagonistic effect of alpha-methyl-p-tyrosine methyl ester (aMT) on d-amphetamine (10.6mcmoles/kg) induced increases in motor activity were studied in male Sprague-Dawley rats. The effect of amphetamine was gradually reduced to a minimum at 1-4 hours after administration of 0.407mmoles/kg aMT; the original response was completely restored within 16 hours. The effect of aMT was dose related between 0.051-0.41mmoles/kg, given 1 hour before amphetamine; doses above 0.41mmoles/kg did not cause any further effect. The antiamphetamine action of aMT was more closely correlated with the reduction of levels of brain dopamine than with brain noradrenaline levels. The inhibition of catecholamine synthesis per se did not appear to be a sufficient condition for aMT-induced antagonism of amphetamine. Results support the view that amphetamine is dependent on a substantial portion of the brain pool of dopamine and possible noradrenaline rather than on small, newly-synthesized pools of these transmitters. 52 references. (Author abstract modified)

000653 Wilcox, Richard E.; Levitt, Rovert A. Drug Dynamic Institute, College of Pharmacy, University of Texas, Austin, TX 78712 **Naloxone reversal of morphine catatonia: role of caudate and periaqueductal gray.** Pharmacology Biochemistry and Behavior. 9(4):425-428, 1978.

The narcotic antagonist naloxone was microinjected into the head of the caudate nucleus (HC), periaqueductal gray matter (PG), or cerebellar white matter (CB) of male Long-Evans rats to counteract the catatonia induced by systemic administration of morphine. Naloxone produced a loss of the catatonic response when administered into HC or PG, but not when microinjected into CB. Isotonic saline in HC, PG, and CB did not counteract the catatonic effects of morphine. The reversal of catatonia was similar for naloxone injections in HC and PG. It is suggested that the high concentrations of opiate receptors in the HC and PG are responsible for the involvement of these areas in the reversal of morphine-induced catatonia. 20 references. (Author abstract modified)

000654 Wilkerson, R. Douglas. Department of Pharmacology, University of South Alabama College of Medicine, 307 University Blvd., Mobile, AL 36688 **Antiarrhythmic effects of tricyclic antidepressant drugs in ouabain-induced arrhythmias in the dog.** Journal of Pharmacology and Experimental Therapeutics. 205(3):666-674, 1978.

The effects of imipramine, desipramine, amitriptyline, protriptyline, doxepin, chlorimipramine and 2-hydroxyimipramine on cardiac arrhythmias produced by ouabain administration were studied in dogs. Imipramine (3mg/kg) significantly increased the dose of ouabain required to produce premature ventricular beats, ventricular tachycardia, and ventricular fibrillation when

it was administered 10 minutes before the intravenous administration of ouabain at a rate of 2mcg/kg/min. In experiments in which ventricular arrhythmias were produced by ouabain administration (66.5plus or minus 1.5mcg/kg) before the administration of tricyclic antidepressant drugs, all of the tricyclic antidepressants employed produced a return to normal sinus rhythm. Conversion to normal sinus rhythm occurred at 0.42 plus or minus 0.1mg/kg of 2-hydroxyimipramine, 0.52 plus or minus 0.07mg/kg of doxepin, 0.75 plus or minus 0.15mg/kg of amitriptyline, 0.9plus or minus 0.11mg/kg of imipramine, 2.4plus or minus 0.4mg/kg of desipramine, 2.8plus or minus 0.15mg/kg of protriptyline and 3.3plus or minus 0.5mg/kg of chlorimipramine. Conversion of similar ouabain-induced arrhythmias occurred at 0.62 plus or minus 0.1mg/kg of lidocaine. In all experiments this antiarrhythmic effect occurred in the absence of significant alterations in blood pressure or heartrate. Atropine or bilateral cervical vagotomy did not alter the antiarrhythmic effects of any of the tricyclic antidepressants tested. Data suggest that acute administration of tricyclic antidepressant drugs in low doses may exert significant cardiac antiarrhythmic activity without adversely affecting cardiovascular function. 21 references. (Author abstract)

000655 Willner, Paul; Clark, David. Psychology Department, City of London Polytechnic, Old Castle Street, London, El 7NT, England **A reappraisal of the interaction between tricyclic antidepressants and reserpine-like drugs.** Psychopharmacology (Berlin). 58(1):55-62, 1978.

Three experiments were conducted to reappraise the action of tricyclic antidepressants in reserpinized animals. In the first experiment, the tricyclic antidepressant drug desmethylimipramine (DMI) was administered to rats, followed 60 minutes later by the fast-acting reserpine-like drug tetrabenazine (TBZ). Results show that activity could be reliably elicited only in young rats after using very high doses of TBZ. The latency of onset was up to 5 hours, and in a separate experiment the animals rendered active by DMI-TBZ failed to perform a well-established operant task. In a third experiment, the activity was apparently unaffected by pretreatment or posttreatment with the dopamine antagonists spiroperidol or pimozide, but partial antagonism was obtained with the noradrenaline antagonists phentolamine and phenoxybenzamine. Among the conclusions are: 1) the action of tricyclic antidepressants in reserpinized animals is a poor model for their clinical actions; 2) there is no a priori reason to expect that the antireserpine and the antidepressant action of tricyclic drugs operate by a common physiological mechanism; and 3) if noradrenaline is involved, the noradrenaline trapping hypothesis seems inadequate to explain the delay in animal activity. 53 references. (Author abstract modified)

000656 Wirtshafter, David; Asin, Karen E.; Kent, Ernest W. University of Illinois at Chicago Circle, Department of Psychology, P.O. Box 4348, Chicago, IL 60680 **Nucleus accumbens lesions reduce amphetamine hyperthermia but not hyperactivity.** European Journal of Pharmacology (Amsterdam). 51(4):449-452, 1978.

Electrolytic lesions of the nucleus accumbens produced an increase in spontaneous locomotion in male Sprague-Dawley rats. The lesions also attenuated the hyperthermic, but not the hyperkinetic, actions of d-amphetamine. Results suggest that dopamine release from the mesolimbic system may underlie amphetamine-induced hyperthermia, but other structures must also be involved in amphetamine-induced hypermotility. 10 references. (Author abstract modified)

000657 Wise, Roy A.; Spindler, Joan; DeWit, Harriet; Gerber, Gary J. Center for Research on Drug Dependence, Department of Psychology, Concordia University, Montreal, Quebec H3G 1M8, Canada **Neuroleptic-induced ""anhedonia" in rats: pimozide blocks reward quality of food.** Science. 201(4352):262-264, 1978.

The anhedonic effect of the neuroleptic pimozide on the behavior of rats was investigated. In several experiments with rewarded and nonrewarded rats, the dopamine receptor blocker pimozide attenuated lever pressing and running-for-food reward in hungry rats. In each case the characteristic behavior of pimozide-treated rats was the same as that of undrugged rats when reward was simply withheld. Drug-induced performance difficulties were ruled out by the presence of periods of normal responding in drug-treated animals. It is concluded that pimozide appears to selectively blunt the rewarding impact of food and other hedonic stimuli. 17 references. (Author abstract)

000658 Wolf, George; Jacquet, Yasuko; Carol, Marilyn. CNP-New York, Pawling, NY 12564 **Test for oral and postingestional factors mediating differential acceptability of morphine, methamphetamine, and chlordiazepoxide drinking solutions.** Psychopharmacology (Berlin). 60(1):101-102, 1978.

The effects of aversive oral and postingestional variables on voluntary drinking of morphine, methamphetamine, and chlordiazepoxide were investigated in male Wistar rats by comparing immediate acceptability with subsequent acceptability. Results indicate that morphine solutions (0.01-0.05%) were avoided primarily because they were unpalatable, whereas methamphetamine (0.005-0.02%) and chlordiazepoxide solutions (0.02-0.08%) were avoided primarily as a result of aversive postingestional effects. This test provides a simple method for assessing aversive gustatory and postingestional properties of drug solutions. 3 references. (Author abstract modified)

000659 Wolff, L. Central Institute of Occupational Medicine, Noldnerstrasse 40-42, DDR-1134 Berlin-Lichtenberg, German Democratic Republic **The effect of 1.1.2.2-tetrachloroethane on passive avoidance learning and spontaneous locomotor activity.** Activitas Nervosa Superior (Praha). 20(1):14-16, 1978.

In a paper read at the 13th Interdisciplinary Conference of Experimental and Clinical Study of Higher Nervous Functions, held at Piestany, Czechoslovakia during October 1976, the effect of 1,1,2,-tetrachloroethane on passive avoidance learning and spontaneous locomotor activity is described. Passive avoidance learning in 8-10-week-old female Wistar rats was blocked by 50mg/kg of tetrachloroethane, but not by 25mg/kg. Spontaneous locomotor activity of male ICR mice in circular cages was reduced by 50% with 50-60mg/kg of tetrachloroethane. Compared with other tests, the CNS depressant effect of tetrachloroethane is more pronounced with the spontaneous locomotor activity measure. 5 references.

000660 Woolverton, William L.; Kandel, David; Schuster, Charles R. Department of Pharmacology, Medical College of Virginia, Richmond, VA 23298 **Tolerance and cross-tolerance to cocaine and d-amphetamine.** Journal of Pharmacology and Experimental Therapeutics. 205(3):525-535, 1978.

The effects of single and repeated injections of cocaine (4.0-32mg/kg) and d-amphetamine (0.5-4.0mg/kg) on milk intake of rats were studied. Experimental sessions consisted of 15 minutes access to 50 ml of a sweetened condensed milk solution. After the determination of the disruptive effects of single injections of cocaine or d-amphetamine on milk intake, rats were injected daily with either 16mg/kg of cocaine 15 minutes before the session, 16mg/kg of cocaine immediately after the session, 2.0mg/kg of d-amphetamine 15 minutes before the session, or saline before the session. During the period of repeated administration when milk intake had stabilized in each group, dose effect functions for cocaine and d-amphetamine on milk intake were redetermined. On selected days, test doses of either drug were sub-

stituted for the usual injection. Test doses were separated by 3 days of stable intake after injection of the appropriate drug or saline. During the period of repeated administration, milk intake returned toward control levels for animals receiving daily cocaine or daily d-amphetamine before the session. When the dose effect functions for cocaine and d-amphetamine on milk intake were redetermined, a shift to the right was observed in all groups that had received drug presession. This indicates that the animals became tolerant to cocaine and d-amphetamine, as well as cross-tolerant to both drugs. Animals that had received postsession injections of cocaine during repeated administration were more sensitive to the effects of cocaine and d-amphetamine on milk intake. 37 references. (Author abstract modifie

000661 Worms, Paul; Lloyd, Kenneth G. Department of Biology, Neuropharmacology Unit, L.E.R.S.-Synthelabo, 31, avenue P. V. Couturier, F-92220 Bagneux, France **Influence of GABA-agonists and antagonists on neuroleptic-induced catalepsy in rats.** Life Sciences (Oxford). 23(5):475-477, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, the effects of direct and indirect gamma-aminobutyric acid (GABA) agonists and antagonists on neuroleptic-induced catalepsy are reported. Direct (muscimol) and indirect (aminooxyacetic acid, diaminobutyric acid, pyrrolidinon) GABA mimetic compounds significantly potentiated neuroleptic-induced catalepsy in male Sprague-Dawley rats. In contrast, subconvulsive doses of direct (bicuculline, picrotoxin) and indirect (allylglycine) GABA antagonists decreased haloperidol-induced catalepsy. The effect of bicuculline and picrotoxin was biphasic, with the lowest doses increasing haloperidol-induced catalepsy. Results indicate that GABA mechanisms are involved in the induction of catalepsy by neuroleptics. 17 references. (Author abstract modified)

000662 Yahr, Pauline; Gerling, Sara A. Department of Psychobiology, University of California, Irvine, CA 92717 **Aromatization and androgen stimulation of sexual behavior in male and female rats.** Hormones and Behavior. 10(2):128-142, 1978.

In three experiments involving 62 male rats, 45 male rats, and 39 female rats respectively it was found that 6alpha-fluorotestosterone, an androgen that is not aromatized in a standard assay system, stimulated sexual behavior in both male and female rats. In males, it was as effective as testosterone. The substance 19-nortestosterone also stimulated more male sexual behavior than would be expected on the basis of its aromatizability in standard assays. In other tests of the aromatization hypothesis the antiestrogen, CI-628 was used. This drug inhibited androgen-linduced sexual receptivity in female rats, but did not inhibit androgen-induced sexual behavior in male rats. In females, CI-628 antagonized testosterone and 6alpha-fluorotestosterone equally. These data suggest that the structures of androgens, rather than their abilities to be aromatized, determine behavioral effectiveness. 44 references. (Author abstract)

000663 Yanaura, Saizo; Suzuki, Tsutomu. Department of Pharmacology, Hoshi College of Pharmacy, Shinagawa-ku, Tokyo 142, Japan **Preference for morphine and drug-seeking behavior in morphine dependent rats.** Japanese Journal of Pharmacology (Kyoto). 28(5):707-717, 1978.

Preference for morphine was investigated in male Sprague-Dawley rats given morphine admixed food on a free-feeding or limited-feeding schedule. Rats on the free feeding schedule showed a preference for mophine of 61.2% with the five-cup method and 61.8% with the two-cup method. In rats treated with morphine on the limited-feeding schedule, the preference rate for morphine during choice trials rapidly increased from 5.5% to 61.2%. When morphine was given subcutaneously after preference for morphine was stabilized at the 60% level, the preference rate was dependent on the dose injected. When the drug admixed concentrations was changed from 1mg/g food to 0.5and 2mg/g food, the preference rate changed in parallel with the concentration. Results demonstrate drug-seeking behavior in rats and indicate that morphine treatment enhances spontaneous intake of morphine admixed food. 20 references. (Author abstract modified)

000664 York, James L. New York State Research Institute on Alcoholism, 1021 Main Street, Buffalo, NY 14203 **A comparison of the discriminative stimulus effects of ethanol, barbital, and phenobarbital in rats.** Psychopharmacology (Berlin). 60(1):19-23, 1978.

Five groups of female Wistar rats were trained in a food-motivated, bar-pressing task to discriminate the effects of intraperitoneal injections of ethanol (330, 660, or 990mg/kg), sodium barbital (80mg/kg), or sodium phenobarbital (25mg/kg) from saline. Highly effective discriminations were established after 80-100 training sessions with the 330mg/kg ethanol group and after 20-40 training sessions in the other groups. After the drug/nondrug discriminations were well established, cross tests revealed that ethanol did not elicit drug appropriate responding in the groups trained with sodium barbital or sodium phenobarbital. However, both barbiturates elicited drug appropriate responding to some extent in rats trained with ethanol as the discriminative stimulus. With barbital, the greatest generalization was observed in rats trained with the low dose of ethanol. Results emphasize the need for several training doses and for transfer tests in both directions in studies of the stimulus effects of drugs. 17 references. (Author abstract modified)

000665 Young, C. E.; Rogers, L. J. Physiology Department, Monash University, Clayton, Victoria, 3168, Australia **Effects of steroidal hormones on sexual, attack, and search behavior in the isolated male chick.** Hormones and Behavior. 10(2):107-117, 1978.

Immature male chickens were treated with testosterone (1mg/day), delta4-androstenedione (1mg/day), 5alpha-dihydrotestosterone (5alpha-DHT; 1mg/day), 5alpha-androstanedione (1mg/day), or estradiol (100mg/day) to assess the effects of these steroids on copulatory behavior, agonistic behavior, and attentional processes. Testosterone, estradiol, and 5alpha-DHT were most effective in stimulating male copulatory behavior above that of oil-treated controls; whereas delta4-androstenedione and 5alpha-androstanedione had less, but nevertheless significant, effects on this behavior. Testosterone and 5alpha-DHT facilitated agonistic behavior; however, estradiol, 5alpha-androstanedione, and delta4-androstenedione were type ineffective in this capacity. The persistence of response to a given stimulus type was increased by testosterone and decreased by 5alpha-DHT; 5alpha-androstanedione had no discernible effect on this behavior. These findings suggest that in the male chicken the neural structures regulating male copulatory and aggressive behavior as well as attentional processes are differentially sensitive to sex steroids. The effects of all these steroids on somatic structures were assessed. 23 references. (Author abstract)

000666 Young, Gerald A.; Steinfels, George F.; Khazan, Naim; Glaser, Edmund M. Department of Pharmacology and Toxicology, University of Maryland School of Pharmacy, 636 West Lombard Street, Baltimore, MD 21201 **Morphine self-administration and EEG power spectra in the rat.** Pharmacology Biochemistry and Behavior. 9(4):525-527, 1978.

Power spectral analyses were used to study changes in EEG during morphine self-administration in freely-moving, drug-de-

pendent female Sprague-Dawley rats prepared with chronic cortical and muscle electrodes and permanent indwelling IV cannulae. As time progressed from one morphine self-injection to another, a significant spectral shift of the EEG to lower frequencies occurred during successive rapid eye movement sleep episodes. Each morphine self-injection reinstated the predominance of higher frequencies in the EEG spectra. These EEG changes may reflect changes in morphine plasma levels and in the state of the CNS that precede drug-seeking behavior. 21 references. (Author abstract modified)

000667 Zabik, Joseph E.; Levine, Richard M.; Maickel, Roger P. Department of Pharmacology, Medical Sciences Program, Indiana University, Bloomington, IN 47401 **Drug interactions with brain biogenic amines and the effects of amphetamine isomers on locomotor activity.** Pharmacology Biochemistry and Behavior. 8(4):429-435, 1978.

The effects of d-amphetamine and l-amphetamine on spontaneous motor activity (SMA) were studied in mice pretreated with agents known to cause alterations in brain biogenic amines: alpha-methyltyrosine (alpha-MT), p-chlorophenylalanine (PCPA), pargyline, and reserpine. Single intraperitoneal doses of 1.0or 4.0mg/kg of d-amphetamine evoked an increase in mouse SMA; in contrast, 1.0mg/kg of l-amphetamine had no significant effect, while 4.0mg/kg decreased SMA. Pretreatment with alpha-MT or pargyline had little effect on the actions of the l-isomer, but reduced the magnitude and duration of the stimulatory effect of d-amphetamine. Pretreatment with PCPA had little effect on the actions of d-amphetamine, but completely abolished the depressant actions of the l-isomer. Reserpine pretreatment markedly reduced basal SMA levels; such pretreatment caused both isomers of amphetamine to act as stimulants of SMA. 28 references. (Author abstract modified)

000668 Zaczek, Robert; Nelson, Mark F.; Coyle, Joseph T. Department of Pharmacology, Johns Hopkins University School of Medicine, 725 North Wolfe Street, Baltimore, MD 21205 **Effects of anaesthetics and anticonvulsants on the action of kainic acid in the rat hippocampus.** European Journal of Pharmacology (Amsterdam). 52(3/4):323-327, 1978.

The effects of anesthetics and anticonvulsants on the acute behavioral response and neurochemical alterations following intrahippocampal injection of kainic acid were examined in male Sprague-Dawley rats. Compared to the effects in animals anesthetized with a combination of chloral hydrate and pentobarbital, brief anesthesia with ether or hexobarbital potentiated whereas prolonged anesthesia attenuated the action of 0.5mcg kainic acid. Chloral hydrate offered less protection than pentobarbital. The anticonvulsants phenobarbital, diazepam, diphenylhydantoin, and carbamazepine offered partial protection when administered in conjunction with ether anesthesia. 9 references. (Author abstract modified)

000669 Zenick, Harold; Padich, Robert; Tokarek, Theresa; Aragon, Polly. Department of Psychology, New Mexico Highlands University, Las Vegas, NM 87701 **Influence of prenatal and postnatal lead exposure on discrimination learning in rats.** Pharmacology Biochemistry and Behavior. 8(4):347-350, 1978.

The effects of prenatal and postnatal lead exposure on discrimination learning was studied in rats. The study animals were offspring of dams who, from 21-99 days of age, were exposed to 1000mg/kg of lead acetate via a daily restricted watering schedule with exposure continuing throughout gestation and nursing. Control dams received distilled water under the same watering schedule. Offspring were weaned at 21 days of age and did not receive lead treatment from that point. Testing began at 30 days of age with animals receiving 10 trials per day for 10 days on a brightness discrimination task conducted in a water escape T-maze. This task was followed by a shape discrimination task conducted in the same apparatus. Analysis of results revealed that the lead-exposed pups made significantly more errors than the controls but had significantly shorter swimming times on both the brightness and shape discrimination tasks. The failure to attend to relevant discriminative cues may account for the observed deficits in lead exposed animals. 14 references. (Author abstract)

000670 Zolman, James F.; Mattingly, Bruce A.; Sahley, Christie L. Physiology and Biophysics, Medical Center, University of Kentucky, Lexington, KY 40506 **Cholinergic involvement in inhibitory behavior of the young domestic chick.** Behavioral Biology. 23(4):415-432, 1978.

The effects of a central cholinergic blocking agent on the behavior of the 4-day-old chick were assessed in three different response situations presumed to measure behavioral inhibition. Four-day-old Vantress X Arbor Acre chicks injected intraperitoneally with scopolamine hydrobromide increased their activity in an open arena, were more resistant to extinction after keypeck conditioning, and were disrupted in passive avoidance learning when compared to saline-injected controls. Performance on these tests of behavioral inhibition was differentially sensitive to the effects of scopolamine. Scopolamine, at 1mg/kg, increased chick activity by about 100% and produced greater resistance to extinction, but had no significant effect on passive avoidance learning. At 4mg/kg, scopolamine also increased chick activity by about 100%, disrupted keypeck performance during extinction testing, and significantly reduced response suppression in the keypeck passive avoidance test. Scopolamine, therefore, affects the young precocial chick performance on three tasks that have been assumed to measure inhibitory behavior, results that are consistent with the effects of cholinergic antagonists on inhibitory behavior of the altricial rat. 39 references. (Author abstract modified)

05 TOXICOLOGY AND SIDE EFFECTS

000671 Aminoff, M. J.; Jaffe, R. A.; Sampson, S. R.; Vidruk, E. H. Cardiovascular Research Institute, University of California, San Francisco, CA 94143 **Effects of droperidol on activity of carotid body chemoreceptors in cat.** British Journal of Pharmacology (London). 63(2):245-250, 1978.

The effect of droperidol on the spontaneous activity of carotid chemoreceptors and on their response to various stimuli was studied in 21 anesthetized, paralyzed, and artificially ventilated cats. In low doses, droperidol infusion transiently increased the rate of spontaneous chemoreceptor activity, but higher doses depressed chemoreceptor activity after initial stimulation. Droperidol reduced or abolished the normal increase in chemoreceptor activity produced by stagnant asphyxia, as well as chemoreceptor responses to sodium cyanide and to dopamine (DA). The DA antagonists chlorpromazine and pimozide also depressed spontaneous chemoreceptor activity and responses to sodium cyanide and DA, but their effects were much briefer and less marked than those of droperidol. 15 references. (Author abstract modified)

000672 Arlock, Per; Gullberg, Bo; Olsson, Sven-Olle R. Institute of Zoophysiology, University of Lund, Helgonavagen 3B, S-223 62 Lund, Sweden **Cardiac electrophysiology of four neuroleptics: melperone, haloperidol, thioridazine and chlorpromazine.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 304(1):27-36, 1978.

The effects of melperone, haloperidol, thioridazine, and chlorpromazine on the isolated guinea-pig papillary muscle were examined. At 0.000001M only melperone prolonged the effective

refractory period without reducing contractility. The same concentration of haloperidol caused a prolongation of the action potential, a flattening of the repolarization phase, and a 40% decrease in contractile force. Thioridazine reduced maximum upstroke velocity, as well as contractile force. Chlorpromazine reduced maximum uptake upstroke velocity and contractile force and caused a flattening of the repolarization phase. At higher concentrations, the effects of haloperidol, thioridazine, and chlorpromazine were more pronounced, while no further changes in melperone action were observed. Thus, melperone differed from the other compounds in the ability to induce homogenous prolongations of the action potential and the effective refractory period without affecting contractility. 73 references. (Author abstract modified)

000673 Berk, Alvin M.; Miller, Ralph R. Department of Psychology, Brooklyn College of CUNY, Brooklyn, NY 11210 **LiCl-induced aversions to audiovisual cues as a function of response measure and CS-US interval.** Behavioral Biology. 24(2):185-208, 1978.

Locomotor avoidance and suppression of drinking were used to monitor learned associations between spatial cues and injections of poison or saline in male Sprague-Dawley rats. Rats injected with hypertonic lithium chloride (LiCl) or hypertonic sodium chloride (NaCl) immediately upon removal from one side of a two-compartment shuttlebox free of ingestible substances later showed locomotor avoidance of that side. Animals that were identically trained and later offered novel fluids in either the compartment paired with injection or the compartment paired with noninjection did not differentially suppress drinking. When injections were isotonic, the NaCl-injected animals displayed neither ingestive nor locomotor aversions, but LiCl-injected animals showed a place-specific reluctance to drink before any locomotor avoidance appeared. When injections were administered 4 minutes after removal from the treatment-paired compartment, LiCl-injected rats developed discriminated suppression of drinking more rapidly than locomotor position preferences, and NaCl-injected rats displayed no acquisition. Animals injected with LiCl or NaCl 4 minutes before being placed into the treatment-paired compartment showed no significant acquisition by either ingestive or locomotor measure. 33 references. (Author abstract modified)

000674 Brissette, Yves; Gascon, Andre L. Department of Pharmacology, Faculty of Medicine, University of Montreal, Montreal, Quebec, Canada H3C 3J7 **Increase in cardiac toxicity of ouabain in dogs after repetitive treatment with diazepam.** Toxicology and Applied Pharmacology. 44(1):127-135, 1978.

The effect of pretreatment with diazepam (0.25-25mg/kg/day for 20 days) on the cardiac toxicity of ouabain was investigated in dogs. Results indicate that diazepam pretreatment decreases the absolute lethal dose of ouabain as well as the survival time to arrhythmias in dogs. This decrease in cardiac toxicity to ouabain in diazepam treatment dogs appears to be related to a greater release of adrenal catecholamines and could be abolished by beta-adrenergic blocking agents or by pseudoadrenalectomy. These data are consistent with reports that cardiac arrhythmias produced by ouabain are partially related to catecholamine release from the adrenal gland. 21 references. (Author abstract modified)

000675 Clow, A.; Jenner, P.; Marsden, C. D. University Dept. of Neurology and King's College Hospital Medical School, Denmark Hill, London SE5, England **An experimental model of tardive dyskinesias.** Life Sciences (Oxford). 23(5):421-423, 1978.

In a paper presented at the Janssen Symposium on Receptors at Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, an experimental model of tardive dyskinesias is described. Male Wistar rats treated chronically with trifluoperazine (3mg/kg/day) for 6 months initially developed mild catalepsy and an inhibition of spontaneous locomotor activity; both effects disappeared by 3 months. An initial increase in dopamine turnover also disappeared by 3 months. Apomorphine-induced stereotypy was completely inhibited in treated animals at 2 weeks, but progressively returned to normal after 3 months of neuroleptic intake; an exaggerated response to apomorphine developed in animals after 6 months of trifluoperazine administration. Inhibition of striatal dopamine-stimulated adenylate cyclase was seen during the first month but was reversed at 3 months. Specific striatal 3H-spiperone binding affinity decreased acutely, but was increased after 6 months of trifluoperazine. No change in the number of receptor sites occurred. 8 references. (Author abstract modified)

000676 Davis, Kenneth L.; Hollister, Leo E.; Vento, Adela L.; Simonton, Susan. Veterans Administration Hospital, Palo Alto, CA 94304 **Choline chloride in animal models of tardive dyskinesia.** Life Sciences. 22(19):1699-1707, 1978.

The effects of choline chloride on an animal model of tardive dyskinesia, in which rats received a very large dose of neuroleptics for a fairly brief exposure, were studied. By varying the duration of treatment with choline chloride, both its effects on the development of neuroleptic-induced supersensitivity and on apomorphine-induced stereotypy in animals with established receptor supersensitivity were determined. Rats treated chronically with haloperidol showed evidence of supersensitive dopamine receptors by increased stereotypy when challenged with apomorphine. When treated acutely with choline chloride at the time of challenge, no changes in stereotypy were observed. Chronic treatment, either during or after induction of supersensitivity, mitigated stereotypy after challenge. This model of dopaminergic supersensitivity is pertinent to the development of tardive dyskinesia in man after treatment with neuroleptic drugs. The results with choline choloride in the animal model are consistent with their therapeutic action in tardive dyskinesia. 21 references. (Author abstract modified)

000677 Dunstan, Robin; Jackson, D. M. Department of Pharmacology, University of Sydney, Sydney, N. S. W. 2006, Australia **Further evidence for a change in central alpha-adrenergic receptor sensitivity after withdrawal from long-term haloperidol treatment.** Naunyn-Schmiedeberg's Archives of Pharmacology (Berlin). 303(2):153-156, 1978.

In a study of change in central alpha-adrenergic receptor sensitivity after withdrawal from long-term haloperidol treatment, it was found that phenoxybenzamine, FLA-63, and alpha-MT produced less locomotor depression in mice withdrawn for 4-days from a 21 day treatment with haloperidol than that produced in vehicle treated animals. There were no differences between the two groups when challenged with yohimbine or phentolamine. The data support the hypothesis that central alpha-adrenergic receptors had become supersensitive and suggest that the sensitivity changes are restricted to postsynaptic receptors. 14 references. (Author abstract modified)

000678 Harris, Larrel W.; Heyl, William C.; Stitcher, David L.; Moore, Robert D. Department of the Army, Biomedical Laboratory, Biosciences Division, Chemical Systems Laboratory, APG, MD 21010 **Effect of atropine and/or physostigmine on cerebral acetylcholine in rats poisoned with Soman.** Life Sciences (Oxford). 22(10):907-910, 1978.

The effects of atropine, physostigmine (a reversible inhibitor of cholinesterase (ChE)), methyl pinacolylphosphonofluoridate (Soman, an irreversible inhibitor of ChE), and neostigmine (a re-

versible ChE inhibitor that does not enter the brain) on cerebral acetylcholine (ACh) levels were investigated in male Sprague-Dawley rats. Physostigmine and Soman reduced cerebral ChE activity to less than 18% of control and increased cerebral ACh levels to 148% and 130% of normal, respectively. Neostigmine failed to alter ChE activity or ACh levels. Atropine decreased ACh levels to 62% of normal. When atropine was given with physostigmine or Soman, the ACh levels were almost normal. Soman failed to increase ACh levels in animals protected with atropine and physostigmine. When physostigmine was followed by Soman, cerebral ACh levels were lower than in animals given physostigmine only. Results indicate that ACh concentrations in animals poisoned with irreversible ChE inhibitors may be managed by prior treatment with appropriate doses of anticholinergic and reversible anticholinesterase drugs. The data also suggest that ACh or anticholinesterases inhibit the synthesis of ACh. 15 references. (Author abstract modified)

000679 Harvengt, C.; Desager, J. P.; Vanderbist, M.; Bogaert, M.; Moerman, E. Laboratoire de Pharmacotherapie, UCL-FART 53.49, Avenue E. Nounier, 53, B-1200 Brussels, Belgium **Sympathetic nervous system response in acute cardiovascular toxicity induced by amitriptyline in conscious rabbits.** Toxicity and Applied Pharmacology. 44(1):115-126, 1978.

The response of the sympathetic nervous system in the acute cardiovascular toxicity induced by amitriptyline, a tricyclic antidepressant, was evaluated in conscious F1 Flemish rabbits. Intraperitoneal injection of amitriptyline at increasing doses (12.5, 25, 37.5, and 50mg/kg) resulted in drug concentrations in plasma and tissue that correlated with the administered doses. A fall in arterial pressure (at least 25% compared to controls) and characteristic electrocardiogram abnormalities were induced the first 10 minutes. Acute renal insufficiency without hyperkalemia was detected 3 hours postinjection in all treated rabbits. Assessment of adrenergic activity made by monitoring plasma catecholamines revealed an early elevation of plasma epinephrine concentrations associated with a marked rise in plasma norepinephrine concentrations. These results establish the hyperactivity of the adrenergic nervous system in the amitriptyline-intoxicated conscious rabbit. 17 references. (Author abstract modified)

000680 Ironton, Robert; Brown, Michael C.; Holland, Robert L. University Laboratory of Physiology, Parks Road, Oxford, OX1 3PT, England **Stimuli to intramuscular nerve growth.** Brain Research (Amsterdam). 156(2):351-354, 1978.

Collateral and terminal sprouting were investigated in the nerve of the mouse peroneus tertius muscle, where neuromuscular transmission was blocked by injection of type A botulinum toxin into the lower legs of the mice. The resulting paralysis was not an adequate stimulus to induce collateral sprouting, but rapidly effected terminal sprouting. Following partial denervation of the muscle in a second experiment, chronic direct stimulation prevented terminal sprouting but not collateral sprouting. Spinalization slightly reduced the number of successful terminal sprouts in the partially denervated muscle. These results indicate that terminal and collateral sprouting are not subject to identical controlling factors. 9 references.

000681 James Robert C.; Franklin, Michael R. Division of Clinical Pharmacology, Vanderbilt University School of Medicine, Nashville, TN 37232 **Tissue concentrations and the mortality of d-amphetamine in mice: changes associated with the use of diethylaminoethyl 2,2-diphenylvalerate HCl.** Toxicology and Applied Pharmacology. 44(1):75-80, 1978.

The concentrations of d-amphetamine produced by doses of 20-60mg/kg were determined in brain, heart, lung, and liver of adult ICR mice. Administration of p-hydroxyamphetamine with amphetamine did not affect mortality and the tissue concentration of this metabolite was not determined. The concentrations of d-amphetamine increased linearly with the dose in brain and lung and nonlinearly in the liver and heart. The concentration in heart tissue varied in a phasic manner, the higher doses producing lower concentrations than an intermediate dose. Pretreatment of mice with diethylaminoethyl 2,2-diphenylvalerate hydrochloride altered tissue concentrations of d-amphetamine only in the liver and heart. 16 references. (Author abstract modified)

000682 Jelinek, R.; Benesova, O.; Horak, J.; Soucek, K. Institute of Experimental Medicine, Czechoslovak Academy of Sciences, Prague, Czechoslovakia **Cardiotoxicity of tricyclic antidepressants and maprotiline in the chick embryo. A comparative study.** Activitas Nervosa Superior (Praha). 20(1):52-54, 1978.

In a paper read at the 19th Annual Psychopharmacological Meeting, held in Jesenik, Czechoslovakia during January 1977, a comparative study of the cardiotoxicity of tricyclic antidepressants and maprotiline in the chick embryo is described. Tricyclic antidepressants injected intraamniotically exhibit a deleterious effect upon the developing chick. Contrary to classical teratogens, their action is more pronounced in later developmental stages, when microgram amounts of antidepressants are capable of producing irreversible cardiac arrest. Impramine, dosulepine, and amitriptyline were found to be significantly more embryotoxic than maprotiline. 2 references.

000683 Jernigan, Howard M., Jr.; Schrank, Gordon D.; Kraus, Lorraine M. Department of Biochemistry, University of Tennessee Center for Health Sciences, Memphis, TN 38163 **Lithium chloride and dilithium carbamyl phosphate: lithium distribution and toxicity in mice.** Toxicology and Applied Pharmacology. 44(2):413-421, 1978.

The ion which is primarily responsible for the toxicity observed at very high doses of dilithium carbamyl phosphate was investigated. Two groups of 15 mice each were given similar amounts of lithium twice daily for 21, 23, or 30 days. Six of 15 mice survived in the group in which the dose was lithium chloride, 12.9mEq per kilogram per day; 8 of 15 survived when the dose of dilithium carbamyl phosphate was 13.8mEq per kilogram per day. Lithium concentrations in tissue and blood lithium concentrations were recorded. Lithium concentrations greater than 15mEq per kilogram were often found in the tissues of the nonsurvivors. The toxic effects associated with the administration of dilithium carbamyl phosphate appear to be due to the lithium cation rather than the carbamyl phosphate dianion. In all parameters measured, the toxic effects of lithium chloride paralleled those observed when an equivalent amount of lithium was administered as dilithium carbamyl phosphate. 14 references. (Author abstract modified)

000684 Kiraly, Stephen J.; Hamilton, John T. Addiction Research Foundation Clinical Institute, 33 Russell St., Toronto, Canada M5S 2S1 Ontario **Ketamine and the neuromuscular junction. Interpretation of the mechanism of some clinical peripheral side effects.** Progress in Neuro-Psychopharmacology. 2(2):179-189, 1978.

The action of ketamine on the mechanical response of the rat diaphragm was studied in an attempt to discover potential clinical side-effects. Ketamine was shown to potentiate and then block, in a dose-related manner, the response both to indirect (nerve) and direct (muscle) stimulation of the rat phrenic nerve diaphragm in vitro. The action on the response to muscle stimulation was still produced in the curarized preparation. The effects were obtained with both concentrations of ketamine that were less than the concentrations used clinically by intramuscular injection. It is concluded that similar unobserved actions

could be occurring in clinical practice. The possible mechanisms and interactions are discussed. 46 references. (Author abstract modified)

000685 Loch, R. K.; Rafales, L. S.; Michaelson, I. A.; Bornschein, R. L. Department of Environmental Health, Division of Toxicology, University of Cincinnati College of Medicine, Cincinnati, OH 45267 **The role of undernutrition in animal models of hyperactivity.** Life Sciences. 22(22):1963-1970, 1978.

The influence of neonatal growth retardation on subsequent spontaneous and d-amphetamine (10mg/kg) induced activity was studied in CD-1 mice. Different growth rates were obtained by raising the mice in litters of 8 or 16 sucklings per lactating dam. At 35 and 37 days of age, the mice were individually tested for general locomotor activity and drug response. Developmental growth retardation influenced their pattern of habituation to the test apparatus and attenuated the response to amphetamine. It is suggested that growth retardation may partially account for the behavioral effects previously attributed to the neurotoxic effects of viruses, 6-hydroxydopamine, or inorganic lead. 24 references. (Author abstract modified)

000686 Massari, V. J.; Tizabi, Y.; Sanders-Bush, E. Laboratory of Clinical Science, Section on Histopharmacology, Building 10, Room 2D-46, NIMH, Bethesda, MD 20014 **Evaluation of the neurotoxic effects of p-chloroamphetamine: a histological and biochemical study.** Neuropharmacology (Oxford). 17(7):541-548, 1978.

The neurotoxic effect of p-chloroamphetamine (PCA) on serotonergic (5-HTC) neurons was investigated in male Sprague-Dawley rats, using the Fink and Heimer silver staining method. The 5-HT axon pathways were traced at various times after electrolytic lesions of the dorsal and medial raphe nuclei, and the high affinity uptake of monoamines in small nuclear areas was determined to provide a guide to the selectivity of the lesions and to the time course of degeneration of 5-HT cells. Degenerating 5-HT axons were traced from the lesion through the median forebrain bundle in a pattern similar to that found with histofluorescence. Serotonergic axon terminals were not demonstrable, however, in the suprachiasmatic or ventrolateral geniculate nuclei, which are known to have dense 5-HT input. After the injection of 10mg/kg PCA, no degeneration of 5-HT axons or axon terminals was seen. PCA caused a decrease in terminal 5-HT and a simultaneous increase in axonal 5-HT levels in spinal cord. Results suggest that PCA is not toxic to 5-HT axons, but it is primarily toxic to 5-HT nerve terminals in the CNS. 30 references. (Author abstract modified)

000687 Nagey, Julia; Decsi, L. Institute of Pharmacology, University Medical School, H-7643 Pecs, P.O. Box 99, Hungary **Physostigmine: a highly potent antidote for acute experimental diazepam intoxication.** Neuropharmacology (Oxford). 17(7):469-475, 1978.

The effects of physostigmine on EEG activity, behavior, and mortality rate were investigated in New Zealand white rabbits, mongrel cats, and Wistar rats acutely poisoned with lethal or near lethal doses of diazepam (80-120mg/kg). Physostigmine (0.25-1.50mg/kg), given at the peak of the diazepam coma, exerted a surprisingly strong antidote effect in all three species. The drug restored normal EEG and behavior within a few minutes, and mortality rate was reduced to a minimum. Peripheral cholinergic blockade with intraperitoneal methylatropine (10-20mg/kg) given concomitantly with or prior to physostigmine prevented the peripheral parasympathetic excitation due to physostigmine but did not alter the antidote effect. 7 references. (Author abstract modified)

000688 Natelson, Benjamin H.; Cagin, Norman A.; Donner, Kenneth; Hamilton, Bruce E. Cagin: Department of Neurosciences, New Jersey Medical School, East Orange, NJ 07018 **Psychosomatic digitalis-toxic arrhythmias in guinea pigs.** Life Sciences. 22(24):2245-2250, 1978.

Psychosomatic-digitalis-induced arrhythmias were demonstrated in adult male guinea-pigs. Animals were subjected daily to six 1 minute tone/light signals, each 5 minutes apart. For half the animals, the signal was followed by rump shock 40% of the time; shock was never delivered to the remaining animals. Animals in both groups were subjected to weekly injections of ouabain, a fast-acting digitalis glycoside. In the shock group, significantly more potentially lethal arrhythmias began during the signal than the minute preceding it. In addition, a significantly higher percentage of arrhythmias began during the signal periods in the shock group than in the no-shock group. These findings indicate that psychogenic factors may contribute to the development of digitalis toxic arrhythmias. 11 references. (Author abstract modified)

000689 Steranka, Larry R.; Sanders-Bush, Elaine. Tennessee Neuropsychiatric Institute, 1501 Murfreesboro Road, Nashville, TN 37217 **Long-term reduction of brain serotonin by p-chloroamphetamine: effects of inducers and inhibitors of drug metabolism.** Journal of Pharmacology and Experimental Therapeutics. 206(2):460-467, 1978.

The effects of inducers and an inhibitor of hepatic microsomal drug-metabolizing enzymes on the p-chloroamphetamine (PCA) induced decreases in brain levels of 5-hydroxytryptamine (5-HT) and tryptophan hydroxylase activity and on the half life of PCA in brain were investigated. All agents modified the half life of PCA in male Sprague-Dawley rat brain in a predictable manner: 3-methylcholanthrene and, to a much lesser extent, phenobarbital decreased the half life of PCA, while piperonyl butoxide markedly increased it. Fluoxetine, an inhibitor of 5-HT uptake, increased the half life of PCA in brain and blocked the long-term effects of PCA on 5-HT levels and tryptophan hydroxylase activity. Of the classical metabolic tools, only 3-methylcholanthrene provided complete protection from the long-term neurotoxic effects of PCA; this protection was not mediated by a blockade of 5-HT uptake, since 3-methylcholanthrene did not decrease synaptosomal uptake of 5-HT. Piperonyl butoxide pretreatment markedly increased the half life of PCA in brain, but failed to modify consistently the effects of PCA. Results indicate that the long-term neurotoxic effects of PCA are not mediated by the major, hepatic metabolites of the drug, but may be mediated by a minor neurotoxic metabolite. 38 references. (Author abstract modified)

000690 Wilkerson, R. Douglas; Sanders, Paul W. Department of Pharmacology, University of South Alabama, College of Medicine, Mobile, AL 36688 **The antiarrhythmic action of amitriptyline on arrhythmias associated with myocardial infarction in dogs.** European Journal of Pharmacology (Amsterdam). 51(3):193-198, 1978.

The antiarrhythmic activity of amitriptyline, a tricyclic antidepressant, was evaluated in anesthetized dogs 24 hours after cardiac occlusion, during the period of spontaneous ventricular arrhythmias. Amitriptyline was administered intravenously in incremental doses of 0.3mg/kg at 1-minute intervals until a conversion to normal sinus rhythm was evident. Amitriptyline resulted in conversion of the ventricular arrhythmia to a normal sinus rhythm in 100% of the animals tested at a mean dose of 1.3mg/kg. Smaller doses also resulted in a dose-related decrease in nonsinus nodal pacemaker activity. Lidocaine produced a reduction of ectopic pacemaker activity but did not eliminate it at a cumulative dose of 2mg/kg. Antiarrhythmic doses of amitrip-

tyline did not produce significant changes in arterial blood pressure, cardiac output, or electrocardiographic parameters associated with atrioventricular or intraventricular conduction. 18 references. (Author abstract modified)

000691 Young, Richard; Porter, Joseph H.; Morgan, Joseph D.; Llewellyn, Gerald C. Department of Psychology, Virginia Commonwealth University, Richmond, VA 23284 **Effects of the hepatocarcinogen, aflatoxin, on open-field behaviors in Syrian hamsters.** Behavioral Biology. 23(4):536-542, 1978.

The effects of aflatoxin, copper acetate, and aflatoxin plus copper acetate on open-field measures and bodyweight were studied in Syrian hamsters. For 35 days, male Syrian hamsters were exposed to food treated with aflatoxin, copper acetate, aflatoxin plus copper acetate, or a control diet. In open-field trials, the copper acetate and control groups showed normal decreases in rears, squares entered, and escape attempts across trials. The two aflatoxin groups did not show a decrease across trials on these measures. The aflatoxin plus copper acetate group showed normal decreases in rears, squares entered, and escape attempts across trials. The two aflatoxin groups did not show a decrease across trials on these measures. The aflatoxin plus copper acetate group showed significant increases in rears and escape attempts. There seemed to be a lack to habituation in all animals receiving aflatoxin, and concurrent copper treatment failed to alter this response. Both aflatoxin groups also displayed a loss of bodyweight. It is concluded that behavioral changes can occur in animals exposed to carcinogens while the animals are still in a precancerous stage. 22 references (Author abstract)

06 METHODS DEVELOPMENT

000692 Fujiwara, Masaaki; Watanabe, Yoko; Katayama, Yasuto; Shirakabe, Yukio. Division of Neurochemistry, Institute for Neurobiology, Okayama University Medical School, 2-5-1 Shikata-cho, 700 Okayama, Japan **Application of high-powered microwave irradiation for acetylcholine analysis in mouse brain.** European Journal of Pharmacology (Amsterdam). 51(3):299-301, 1978.

Acetylcholine (ACh) levels were measured in whole brains or in discrete areas of brains of ddY mice, after sacrificing by decapitation or by conventional or high powered microwave irradiation. ACh levels in mouse brain varied according to the time required to inactivate the enzymes. ACh levels after high powered microwave irradiation for 0.2seconds were significantly higher than those after conventional microwave irradiation for 2.0seconds. 7 references. (Author abstract modified)

000693 Garrett, Edward R.; Gurkan, Turkan. Beehive, College of Pharmacy, J. Hillis Miller Health Center, University of Florida, Gainesville, FL 32610 **Pharmacokinetics of morphine and its surrogates I: comparisons of sensitive assays of morphine in biological fluids and application to morphine pharmacokinetics in the dog.** Journal of Pharmaceutical Sciences. 67(11):1512-1517, 1978.

A sensitive isotope derivatization assay was developed to quantify morphine in biological fluids in the nanogram/milliliter range. Morphine, derivatized with 3H-dansyl chloride, was separated from the reaction products by thin layer chromatography. The spots were scraped from the plate, and the eluted radioactivity was determined by liquid scintillation. There were no significant differences in results obtained with the liquid scintillation, electron capture gas/liquid chromatography, and radioisotope derivatization methods for morphine obtained from the plasma of a dog given 14.0mg iv morphine. Morphine conjugates were assayed as morphine after the acid hydrolysis of plasma and urine were preextracted to remove unconjugated morphine, and the equivalence of various methods for monitoring plasma and urine pharmacokinetics in dogs was demonstrated. 37 references. (Author abstract modified)

000694 Gelbke, H. P.; Schlicht, H. J. Institut fur Rechtsmedizin der Universitat Heidelberg, Vosstrasse 2, D-6900 Heidelberg, Germany **Formation of thermally stable derivatives of chlordiazepoxide and its desmethyl metabolite for GLC.** Journal of Pharmaceutical Sciences. 67(8):1176-1177, 1978.

A derivatization procedure is described for the gas/liquid chromatographic determination of subnanogram amounts of chlordiazepoxide and nanogram amounts of N-desmethylchlordiazepoxide. Treatment with acetic anhydride at elevated temperature eliminates the highly polar and unstable nitrone group of these compounds by rearrangement and acetylation. The mass spectrometric fragmentation pattern of the acetyl derivatives is reported and interpreted. 33 references. (Author abstract)

000695 Geyer, Mark A.; Dawsey, W. John; Mandell, Arnold J. Department of Psychiatry, University of California at San Diego, La Jolla, CA 92093 **Fading: a new cytofluorimetric measure quantifying serotonin in the presence of catecholamines at the cellular level in brain.** Journal of Pharmacology and Experimental Therapeutics. 207(2):650-667, 1978.

A new histopharmacological approach to the study of serotonergic neurons is described. A computerized microspectrofluorimeter was used to demonstrate that a measure of fluorescence fading, reliably detects changes in serotonin even in the presence of catecholamines. This fading measure was validated with model droplets containing serotonin, norepinephrine, or mixtures of the two and with in vivo studies using pargyline to increase brain serotonin in male Sprague-Dawley rats. After various doses of pargyline, a correlation of 0.927 was found between the intraperikaryal fading measure and a standard fluorimetric measure of serotonin in dissected samples of the raphe. Both lysergic acid diethylamide (75 and 150mcg/kg) and the monoamine oxidase inhibitor pargyline (25mg/kg) increased intraperikaryal serotonin without affecting extraperikaryal fluorescence. The serotonin reuptake inhibitor fluoxetine produced the opposite effect, selectively increasing extraperikaryal serotonin. Chlorimipramine, which blocks reuptake of both serotonin and norepinephrine, markedly increased both intraperikaryal and extraperikaryal serotonin. These results confirm the utility of cytofluorimetric measures of serotonin within raphe cell bodies and indicate that changes in the intracellular and extracellular concentrations of serotonin can be differentiated. 52 references. (Author abstract modified)

000696 Hoeldtke, Robert; Kaufman, Seymour. Laboratory of Neurochemistry, NIMH, Bethesda, MD 20014 **A tritium-release in vivo assay of dopamine-beta-hydroxylase activity in sympathetic neurons.** Biochemical Pharmacology (Oxford). 27(21):2499-2506, 1978.

Measurement of the rate of release in vivo of tritium from (beta-3H)dopamine is proposed as an index of dopamine-beta-hydroxylase (DBH) activity in sympathetic neurons. After systemic administration of this labeled compound to Sprague-Dawley rats, the accumulation of tritium in body water was roughly linear with time and was partially inhibited by pretreatment with the DBH inhibitors disulfiram and fusaric acid. Pretreatment with the monoamine oxidase inhibitor, tranylcypromine, altered neither the rate of tritiated water accumulation nor the extent to which this rate was slowed by DBH inhibitors. Chemical sympathectomy with 6-hydroxydopamine, which leads to a decrease in DBH activity in tissue extracts, decreased the rate of tritiated water release in vivo. Chronic exposure to cold, which leads to an increase in DBH activity in tissue ex-

tracts, increased the rate of tritiated water release in vivo; this effect of cold stress was prevented by DBH inhibitors. Results suggest that accumulation of tritiated water in the whole animal after the administration of (beta-3H)dopamine can be used as an index of DBH activity in sympathetic neurons. 40 references. (Author abstract modified)

000697 Hubbard, J. W.; Midha, K. K.; Cooper, J. K.; Charette, C. Faculty of Pharmacy, University of Manitoba, Winnipeg, Manitoba, Canada **Radioimmunoassay for psychotropic drugs II: synthesis and properties of haptens for tricyclic antidepressants.** Journal of Pharmaceutical Sciences. 67(11):1571-1578, 1978.

For the development of clinical radioimmunoassay procedures for tricyclic antidepressants, two drug haptens were synthesized for each of the two amitriptyline/nortriptyline and imipramine/desimipramine groups. In one case, nortriptyline or desipramine was treated with succinic anhydride to yield N-(3-carboxypropionyl) derivatives; in the other case, the haptens were novel N-(2-carboxyethyl) derivatives. The hapten and its corresponding ester were characterized by gas/liquid chromatography/mass spectrometry, PMR spectrometry, and infrared spectrophotometry. Each hapten was coupled to bovine serum albumin, and the number of hapten residues per mole of bovine serum albumin was determined by ultraviolet spectrophotometric methods. Antibodies to each hapten/protein conjugate were developed in rabbits, and titers of the antiserums were checked by evaluating their binding characteristics to tritiated drug. 51 references. (Author abstract)

000698 Hubbard, J. W.; Midha, K. K.; McGilveray, I. J.; Cooper, J. K. Faculty of Pharmacy, University of Manitoba, Winnipeg, Manitoba, Canada **Radioimmunoassay for psychotropic drugs I: synthesis and properties of haptens for chlorpromazine.** Journal of Pharmaceutical Sciences. 67(11):1563-1571, 1978.

In the development of clinical radioimmunoassay procedures for chlorpromazine and its active metabolites, three chlorpromazine haptens, 7-(or 8-)(3-carboxypropionyl)chlorpromazine, N-(3-carboxypropionyl)desmethylchlorpromazine, and N-(2-carboxyethyl)desmethylchlorpromazine, were synthesized and characterized by gas/liquid chromatography/mass spectrometry, PMR spectrometry, and infrared spectrometry. Each hapten was coupled to bovine serum albumin, and the number of hapten residues per mole of bovine serum albumin was calculated by ultraviolet spectrophotometric methods. Antibodies to each hapten protein conjugate were obtained in rabbits, and titers of the antiserums were checked by evaluating their binding characteristics to tritiated chlorpromazine. 19 references. (Author abstract)

000699 Kebabian, John W. Experimental Therapeutics Branch, National Institute of Neurological and Communicative Disorders and Stroke, Bethesda, MD 20014 **A sensitive enzymatic-radioisotopic assay for apomorphine.** Journal of Neurochemistry (Oxford). 30(5):1143-1148, 1978.

An enzymatic/radioisotopic assay for apomorphine, capable of detecting as little as 3 pmol, is described. The basis of the assay is the O-methylation of apomorphine using S-(methyl-3H)adenosyl-L-methionine and a partially purified catechol-O-methyl transferase to form (methyl-3H)apocodeine. The radiolabeled apocodeine is purified by solvent partition. Following systemic administration of apomorphine, the compound was uniformly distributed throughout the brain of the rat: there was no selective accumulation of apomorphine in dopaminergic regions of the brain. The level of apomorphine in the substantia nigra was as great as that in the caudate-putamen. These findings suggest that some of the in vivo effects of apomorphine occur via an action of the drug within the substantia nigra rather than by an action within the caudate-putamen. 28 references. (Author abstract)

000700 Lewi, Paul J. Research Laboratories, Janssen Pharmaceutica N.V., B-2340 Beerse, Belgium **Classification of dopamine-antagonists from pharmacological data.** Life Sciences (Oxford). 23(5):519-521, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, a method of classifying dopamine receptor antagonists on the basis of their relative affinities for three receptors is described. A spectral map of 45 dopamine antagonists was constructed, based on data obtained from the ATN test in rats. The ATN test was designed to study the interaction of drugs with apomorphine, a dopamine receptor agonist; tryptamine, which mimics 5-hydroxytryptamine; and norepinephrine. Median effective dose values for tryptamine bilateral seizures, apomorphine agitation, and norepinephrine mortality form the vertices of a triangle; grid lines on this spectral map define an empirical classification involving nine main classes of dopamine antagonists and several subclasses. 3 references. (Author abstract modified)

000701 Maruyama, Y.; Iida, N.; Kusaka, M.; Horikawa, A.; Mori, J.; Munekiyo, K. Section of Biochemical Pharmacology, Japan Upjohn Research Laboratories, 68 Ohyagi, Takasaki, Gunma 370, Japan **Application of a newly developed electrochemical detector for liquid chromatography to the assay of brain catecholamines.** Progress in Neuro-Psychopharmacology. 2(1):73-78, 1978.

The use of an electrochemical detector for liquid chromatography to determine picogram amounts of catecholamines in mouse and rat brain is described. The extraction procedure was based on modifications of the methods of Kissinger and of Anton and Sayre, in which catecholamines were absorbed on aluminum oxide and eluted with perchloric acid. By this method, norepinephrine levels were found to be 431ng/g in ICR mouse brain and 426ng/g in Sprague-Dawley rat brain; dopamine levels were 1088ng/g in mouse brain and 787ng/g in rat brain. Dopamine levels in rat whole brain varied significantly with the method of sacrifice. Norepinephrine levels in the forebrain after electrolytic destruction of the locus coeruleus were significantly decreased (24.2%) from that of control. 11 references. (Author abstract modified)

000702 Tam, Stanley; Seeman, Philip. Department of Pharmacology, Medical Sciences Building, University of Toronto, Toronto, Ontario, Canada M5S 1A8 **Neuroleptic receptors in calf caudate: solubilization by digitonin.** European Journal of Pharmacology (Amsterdam). 52(1):151-152, 1978.

The digitonin method was used to solubilize neuroleptic receptors in calf caudate nucleus. The digitonin solubilization procedure preserved the stereoselectivity of the tritiated neuroleptic sites. This method permits more detailed characterization of the neuroleptic receptor sites than has previously been achieved. 5 references.

000703 Tang, S. W.; Stancer, H. C.; Warsh, J. J. Department of Neurochemistry, Clarke Institute of Psychiatry, Toronto, Ontario, Canada M5T 1R8 **A radiotracer method for the measurement of central nervous system catecholamines in vivo.** Canadian Journal of Physiology and Pharmacology (Ottawa). 56(3):535-538, 1978.

A radiotracer method for the in vivo measurement of brain catecholamines was tested in male Riemens rabbits. Tritiated norepinephrine was infused intravenously to label the peripheral

norepinephrine pools. The specific activity of urinary 3-methoxy-4-hydroxymandelic acid was consistently higher than that for 3-methoxy-4-hydroxyphenylglycol (MHPG). Central sympathectomy with 6-hydroxydopamine abolished this difference. It is estimated that 30-50% of urinary MHPG originates from the CNS. 24 references. (Author abstract modified)

000704 Underberg, W. J. M. Farmaceutisch Laboratorium, Rijksuniversiteit Utrecht, Catharijnesingel 60, Utrecht, Netherlands **Oxidative degradation of pharmaceutically important phenothiazines II: quantitative determination of promethazine and some degradative products.** Journal of Pharmaceutical Sciences. 67(8):1131-1133, 1978.

Methods for the determination of promethazine and several degradation products in kinetic studies were developed. All determinations were carried out after isolation of the compounds by thin layer chromatography. Promethazine was determined by oxidation with vanadyl sulfate in an acidic medium; the method was suitable for about 3mg of the compound. 3H-Phenothiazine-3-one was determined spectrophotometrically at 492nm in acetone; the compound could be determined in amounts of 30-40microg. Promethazine-5-oxide was determined spectrophotometrically using the acid dye method; 100-200microg could be determined. 7-Hydroxy-3H-phenothiazine-3-one could be determined spectrophotometrically at 600 nm after extraction of the other compounds from the solution. The medium had to be alkaline and contain water in a fixed ratio. The method was suitable for 15-30microg of the compound. 4 references. (Author abstract)

000705 van der Heyden, J. A. M.; Korf, J. Department of Biological Psychiatry, Psychiatric University Clinic, Oostersingel 59, Groningen, The Netherlands **Regional levels of GABA in the brain: rapid semiautomated assay and prevention of postmortem increase by 3-mercapto-propionic acid.** Journal of Neurochemistry (Oxford). 31(1):197-203, 1978.

A simple and rapid semiautomated assay for gamma-aminobutyric acid (GABA) in the CNS is described. The method is based on a simple manual procedure of isolating GABA from tissue extracts on small CM Sepharose C16B columns, followed by an automated fluorimetric detection (continuous flow system) with o-phthalaldehyde (OPA) and beta-mercapto-ethanol (beta-ME) at an alkaline pH. GABA is separated from other compounds that fluoresce in the detection system. By using low concentrations of OPA and beta-ME and allowing only a short reaction time with these reagents, the detection is specific for GABA, with a detection limit of 1nmol. In addition, a procedure is described for the prevention of postmortem GABA increase in rat and mouse brain by intravenous injection of 3-mercapto-propionic acid (1.2nmol/kg) 2 minutes prior to decapitation. This treatment and microwave irradiation result in similar GABA levels in mouse brain and substantia nigra tissue from rat brain. 40 references. (Author abstract)

000706 Vinh, C. T.; Braun, J.; Plourde, J. R. Faculty of Pharmacy, University of Montreal, Quebec, Canada H3C 3J7 **Determination of clonazepam in tablets by dc polarography.** Journal of Pharmaceutical Sciences. 67(5):731-733, 1978.

A simple and convenient method for the routine determination of clonazepam in tablets by dc polarography is described. Clonazepam is extracted from the sample by ethanol and diluted with pH 4.15 acetate buffer in a volumetric flask. The filtered solution is then polarized at the dropping mercury electrode versus the saturated calomel electrode. The polarographic wave is well developed; the determination is quantitative, precise, and accurate. 9 references. (Journal abstract)

000707 Watson, J. R.; Lawrence, R. C.; Lovering, E. G. Drug Research Laboratories, Health Protection Branch, Ottawa, Ontario, Canada K1A OL2 **Simple GLC analysis of anticonvulsant drugs in commercial dosage forms.** Journal of Pharmaceutical Sciences. 67(7):950-953, 1978.

A simple, specific gas/liquid chromatographic (GLC) procedure is described for the analysis of one sedative and six anticonvulsant drugs in pharmaceutical dosage forms. Sample aliquots of ethotoin, glutethimide, mephenytoin, methsuximide, and phensuximide were shaken with or extracted into ethyl acetate, diluted with the internal standard (diphenyl phthalate) solution, injected into a gas chromatograph, and eluted from a methylsilicone column. Primidone and phenytoin samples (extracted as the free acid) required derivatization with N,O-bis(trimethylsilyl) acetamide prior to chromatography. The same temperature programming conditions and flow rate settings were used for all seven drugs. The GLC results agreed well with those obtained using the pharmacopeial methods. 20 references. (Author abstract)

000708 Welsh, F. A.; Rieder, W. Division of Neurosurgery, University of Pennsylvania, Philadelphia, PA 19104 **Evaluation of in situ freezing of cat brain by NADH fluorescence.** Journal of Neurochemistry (Oxford). 31(1):299-309, 1978.

Cat brain was frozen in situ with liquid nitrogen, and frozen brain slices were surveyed for regions of increased nicotinamide adenine dinucleotide (NADH) fluorescence to identify areas with ischemic artifact. In addition, levels of adenosine triphosphate (ATP), phosphocreatine, lactate, and NADH were determined in various brain regions. High levels of ATP and phosphocreatine and low levels of lactate and NADH were present in all brain regions except the depths of some cortical sulci. These regions of ischemic changes were easily detected via increased NADH fluorescence in frozen brain slices. Deep brain structures such as basal ganglia and hippocampus showed neither high tissue fluorescence nor ischemic changes of the metabolites measured. It is concluded that in situ freezing of cat brain adequately preserves metabolite levels in most regions. 22 references. (Author abstract)

CLINICAL PSYCOPHARMACOLOGY

07 EARLY CLINICAL DRUG TRIALS

000709 Agnoli, A.; Ruggieri, S.; Casacchia, M. Department of Neurology and Psychiatry, School of Medicine, University of L'Aquila, L'Aquila, Italy **Restatement and prospectives of ergot alkaloids in clinical neurology and psychiatry.** Pharmacology (Basel). 16(Suppl. 1):174-188, 1978.

The future uses of ergot alkaloids in clinical neurology and psychiatry are considered. In studies on parkinsonism, bromocriptine proved to be effective in reducing symptoms of rigidity and tremor. Bromocriptine also reduced the extrapyramidal syndrome in patients under chronic treatment with neuroleptics. Studies comparing bromocriptine with other drugs on reducing the symptoms of degenerative chorea, depressive syndrome, aging, and epilepsy are also reported. 36 references.

000710 Concannon, James Thomas. State University of New York at Binghamton **Interaction of drug state-dependent retention and infantile amnesia. (Ph.D. dissertation).** Dissertation Abstracts International. Ann Arbor, MI, Univ. M-films, No. 78-7104, HC$15. MF$7.50. 117 p. 1978.

State-dependent retention induced by sodium pentobarbital was examined in infant (16-day-old) and weanling age (23-day-old) rats using Pavlovian fear conditioning in a modified escape from fear paradigm. Retention was clearly state dependent at the 1-day retention interval for animals conditioned at infant age, with animals conditioned and tested while drugged showing superior retention. Drug/drug retention for weanling age rats, however, revealed a dose-dependent depression of test performance. In addition, infant rats were shown to forget more than weanling age rats when both age groups were conditioned and tested in the nondrugged state, demonstrating infantile amnesia, although this infantile amnesia could be attenuated by the drug/drug retention manipulation. Subsequent investigation showed that good drug/drug retention could be found even though the drug was not present in original conditioning but was administered directly after conditioning, and prior to testing in 16-day-old animals. Thus, infantile amnesia may reflect a type of contextual dissociation which can be altered by a drug state dependent retention mechanism which may depend primarily on the presence of the drug during postconditioning memory formation and subsequent retention testing. (Journal abstract)

000711 Denber, Herman C. B.; Feldmann, Harry. Department of Psychiatry, University of Louisville School of Medicine, P.O. Box 1055, Louisville, KY 40201 **AHR-6134 -- a new anxiolytic drug with unusual clinical properties.** Progress in Neuro-Psychopharmacology. 2(1):117-122, 1978.

The antianxiety effects of 4-(4-(4-chlorobenzoyl)piperidyl)-1-(4-fluorophenyl)-1-butanone hydrochloride (AHR-6134) were studied in six hospitalized psychotic patients and 28 patients in a private practice. The drug was a very effective anxiolytic at low doses, which did not produce sedation, listlessness, drowsiness, or neurologic reactions. The chemical formula of AHR-6134, a butyrophenone, suggests that the drug is not likely to be addictive. 4 references. (Author abstract modified)

000712 DeVeaugh-Geiss, Joseph; Manion, Lawrence. Department of Psychiatry, 750 East Adams St., Syracuse, NY 13210 **High-dose pyridoxine in tardive dyskinesia.** Journal of Clinical Psychiatry. 39(6):573-575, 1978.

A study of five patients with tardive dyskinesia was conducted to determine if pyridoxine would act to decrease postsynaptic hypersensitivity to dopamine. Dopamine has been hypothesized to be pathophysiological process responsible for tardive dyskinesia. Four of the five patients showed a reduction in frequency of involuntary movements while on pyridoxine. Return of pretreatment movement frequencies was seen within 1 week after discontinuation of pyridoxine. High oral doses were well tolerated with headache and indigestion being the only side-effects reported. The most severe movement disorders appeared to respond most dramatically while the least severe disorder showed no response or may have been aggravated by the treatment. It is suggested that high doses of pyridoxine may act in the central nervous system by reducing dopaminergic influences in nigrostriatal pathways. 10 references.

000713 Marriott, Peter; Hiep, Albert. Department of Psychiatry, Melbourne University, 72 Roberts Street, Essendon, 3040, Australia **Patterns of prescribing depot neuroleptics at an Australian clinic.** International Journal of Mental Health. 6(4):104-117, 1978.

Phenothiazine prescription patterns were examined at the Fluphenazine Clinic at Royal Park Hospital in Victoria, Australia, in order to assess the effectiveness and dosage of antiparkinsonian drugs, possible sex and age variables, and the type of extrapyramidal side-effects that responded to them. Surveys of patients suffering from schizophrenia treated in 1972, 1973, and 1975 are presented, although it is noted that at the time of the early studies, decisions concerning the use of the drug were still being formulated and there was some lack of uniformity in treatment patterns. Results are discussed in terms of the control of specific side-effects. It is suggested that although the ideal drug for reducing extrapyramidal side-effects is not yet developed, intramuscular forms of drugs such as dexetimide provide a partial solution. 23 references.

000714 Nakano, Shigeyuki; Hollister, Leo E. Hollister: V.A. Hospital, 3801 Miranda Avenue, Palo Alto, CA 94304 **Early clinical testing of antianxiety drugs: an experimental model.** Progress in Neuro-Psychopharmacology. 2(1):101-106, 1978.

In an experimental model for detecting antianxiety activity of drugs, 20 male volunteers with high levels of trait anxiety were stressed by having to perform a mirror drawing test (MDT). In this model, a single dose of 5mg diazepam prevented the performance decrement induced by the MDT stress, whereas placebo did not. When these same subjects were retested after various intervals, however, no differences in diazepam and placebo performance were detected. It is concluded that this experimental model for testing antianxiety drugs is sensitive, but that subjects cannot be tested in it more than once, due to prior learning effects. 22 references. (Author abstract modified)

08 DRUG TRIALS IN SCHIZOPHRENIA

000715 Alexander, Paul E.; Van Kammen, Daniel P.; Bunney, William E., Jr. Veterans Administration Hospital, Providence, RI 02908 **Serum calcium and magnesium in schizophrenia: relationship to clinical phenomena and neuroleptic treatment.** British Journal of Psychiatry (London). 133(August):143-149, 1978.

Serum calcium and magnesium were studied in drug-free and neuroleptic-treated schizophrenic patients. Calcium and magnesium were not significantly different in 31 unmedicated schizophrenic patients compared with normal controls. Serum calcium was altered, however, in two subgroups: 1) patients who remitted after neuroleptic withdrawal were significantly lower in calcium than those who did not remit; 2) catatonic schizophrenic

patients appeared to have an increased calcium at the onset of catatonic stupor. Patients treated with pimozide were found to have a significant decrease in both calcium and magnesium compared with their drug-free values. These same patients showed a similar decrease in both electrolytes during treatment with fluphenazine, a structurally different neuroleptic drug. 46 references. (Author abstract)

000716 Alpert, M.; Diamond, F.; Weisenfreund, J.; Taleporos, E.; Friedhoff, A. J. New York University, School of Medicine, 550 First Ave., New York, NY 10016 **The neuroleptic hypothesis: study of the covariation of extrapyramidal and therapeutic drug effects.** British Journal of Psychiatry (London). 133(August):169-175, 1978.

A therapeutic trial with chlorpromazine was conducted with a homogeneous group of recently admitted schizophrenic patients. Extrapyramidal effects were measured through quantitative analysis of digital tremor after 4 days of fixed-dose treatment. Assessment of treatment efficacy was based on Brief Psychiatric Rating Scale ratings done at the end of 4 weeks' treatment. Those patients whose tremor was least affected by the drug were most likely to benefit from the treatment. Implications of this negative correlation for the understanding of the neuroleptic hypothesis and the closely associated dopamine hypothesis of schizophrenia are discussed. 34 references. (Author abstract)

000717 Brockington, I. F.; Kendell, R. E.; Kellett, J. M.; Curry, S. H.; Wainwright, S. University Hospital of South Manchester, West Didsbury, Manchester 20, England **Trials of lithium, chlorpromazine and amitriptyline in schizoaffective patients.** British Journal of Psychiatry (London). 133(August):162-168, 1978.

Two drug trials with lithium, chlorpromazine, and amitriptyline in schizoaffective patients are reported. Nineteen schizomanic patients were treated for 1 month on a double-blind basis with chlorpromazine or lithium, and 41 schizodepressive patients were treated with amitriptyline, chlorpromazine or both. In the schizodepressive patients there was a trend to a better response to chlorpromazine. Generally drug response was poor and only 20% of the patients recovered within the month. In the schizomanic patients lithium seemed as effective as chlorpromazine, which supports the view that these patients were suffering from a variant of mania. 20 references. (Author abstract)

000718 Czerwinski, Andrzej; Chlopocka-Wozniak, Maria. Katedra i Klinika Psychiatryczna AM, ul. Szpitalna 27/33, 60-572 Poznan, Poland **/Clinical evaluation of the effectiveness of eglonyl (sulpiride) in the treatment of paranoid schizophrenia (preliminary report)./** Ocena Kliniczna skutecznosci eglonylu (sulpiryd) w leczeniu schizofrenii paranoidalnej (doniesienie wstepne). Psychiatria Polska (Gdansk). 12(2):173-178, 1978.

The clinical effectiveness of eglonyl (sulpiride) in the treatment of 30 patients diagnosed as paranoid schizophrenics was studied. Nineteen cases (63.3%) showed improvement. The drug was found to have activating and antidepressant properties and to diminish the intensity of psychotic syndromes. Apart from mild extrapyramidal symptoms, no side-effects were observed during treatment. Sulpiride has been found to be a very useful drug, especially in the treatment of apathic (deficit) syndromes of schizophrenic origin. 14 references. (Journal abstract)

000719 Donlon, Patrick, T.; Meyer, Jo Ellen. 2252 45th Street, Sacramento, CA 95817 **A twelve month comparison of penfluridol and trifluoperazine in chronic schizophrenic outpatients.** Journal of Clinical Psychiatry. 39(6):582-583, 586-587, 1978.

A 52-week double blind study comparing the efficacy and safety of penfluridol and trifluoperazine in 25 chronic schizophrenic outpatients was conducted. Penfluridol was administered once weekly and trifluoperazine daily. Measurements were made at baseline, at various fixed intervals during the study period, and at termination. The data revealed that both agents were similarly effective in maintaining control of the symptoms of chronic schizophrenic patients at a level commensurate with or better than that provided by the previous medication. Other side-effects were similar in severity and occurrence between study drug groups. Both agents had low autonomic liability and neither agent was depressogenic. 7 references. (Author abstract modified)

000720 Donnelly, Edward F.; Nasrallah, Henry A.; Wyatt, Richard Jed; Gillin, J. Christian; Bigelow, Llewellyn B. NIMH, St. Elizabeths Hospital, William A. White Building, Washington, DC 20032 **Effects of dopamine synthesis inhibition on WAIS comprehension.** Journal of Consulting and Clinical Psychology. 46(3):385-388, 1978.

A therapeutic trial of alpha-methyl-para-tyrosine (AMPT) in a group of chronic schizophrenic patients which tested the hypothesis that the dopamine activity decreasing effect of AMPT might increase Wechsler Adult Intelligence Scale (WAIS) comprehension subtest scores is described. It was found that comprehension scores improved significantly with AMPT. Other clinical rating instruments failed to show any changes. Implications of using a psychometric instrument to assess specific, but clinically obscured, drug effects on intellectural functioning are discussed. 19 references. (Author abstract modified)

000721 Ericksen, Stephen E.; Hurt, Stephen W.; Chang, Sidney. Illinois State Psychiatric Institute, Chicago, IL **Haloperidol dose, plasma levels, and clinical response: a double-blind study.** Psychopharmacology Bulletin. 14(2):15-16, 1978.

The effect of higher-than-usual doses of haloperidol given early in the treatment on reintegration of acutely decompensated schizophrenic patients was studied using a double-blind design. Patients (n=42) who had been drug free for an average of 2 weeks were randomly assigned to high loading dose or standard dose groups. The loading dose group was given 60mg i.m. daily in six divided doses for the first 5 days of the study plus placebo tablets. Oral doses of haloperidol were gradually reduced from 45mg for 2 days, 30mg for 2 days, 20mg for 3 days, to 15mg daily for the final week of the study. Patients assigned to the standard dose schedule received 15mg p.o. daily throughout the study in addition to the placebo injection. Both groups demonstrated rapid improvement of psychotic symptoms. The loading group tended to have more frequent and severe extrapyramidal reactions usually during the first 48 hours. The findings suggest that the practice of giving large parenteral doses of drug to increase the rate of improvement holds no advantage over a more conservative oral regimen.

000722 Galdi, Joseph. George Washington University **Genetic factors in the response to neuroleptics in acute schizophrenia: a psychopharmacogenetic study. (Ph.D. dissertation).** Dissertation Abstracts International. 39(3):1476-B, 1978. Ann Arbor, Univ. M-films No. 7816265. 297 p., 1978.

A psychopharmacogenetic analysis was conducted on the effect of neuroleptic drugs on an a priori genetic classification of acute schizophrenia, predicting differential patterns of behavioral response that were potentially releveant to the diagnosis of more discrete forms of this disorder. The classification was based on a primary (type) distinction between patients who had depressed (D) as opposed to schizophrenic (S) first-degree relatives and a secondary (geneological) distinction in which pa-

tients with schizophrenic relatives were further subclassified as dominant (SD) and recessive (SR) subtypes. Neuroleptics were distinguished by adverse side-effect profiles and classified as ANS and CNS reactive types, controlled where possible by placebo. Expected higher levels of postpsychotic depression in D-schizophrenics was confirmed as a psychopharmacogenetic effect. A similar prediction relating hostile paranoid symptoms to genetic factors, depended on drug type. Findings attributing severe akinesia and other extrapyramidal side-effects of psychopharmacogenetic induction were likewise equivocal. Preliminary analysis of pretreatment symptoms profile between the genetic subtypes revealed higher levels of depression in D-schizophrenics and more hallucinatory phenomena in SR schizophrenics. Results further support the diffentibility of acute schizophrenia by a priori genetic classification approach. (Journal abstract modified)

000723 Gillin, J. Christian; Kleinman, Joel E.; Nasrallah, Henry A.; Bigelow, Llewellyn B.; Rogol, Allan; Luchins, Daniel; Carman, John; Weinberger, Daniel. Laboratory of Clinical Psychopharmacology, NIMH, St. Elizabeths Hospital, Washington, DC 20032 **Inhibition of dopamine synthesis in chronic schizophrenia: a follow-up study. (Unpublished paper)** Washington, DC, NIMH, 1978. 3 p.

The effects of administering alpha-methyl-para-tyrosine (AMPT) to seven chronic schizophrenic patients were studied. The clinical status of the patients was monitored daily by the Nurses Rating Scale and weekly by the Brief Psychiatric Rating Scale. Coadministration of AMPT and a constant dose of phenothiazine had no significant effect on the psychiatric status of chronic schizophrenic patients. Further studies are suggested to evaluate the hypothesis that a functional excess of dopamine is associated with psychotic or paranoid symptoms and that decreased dopaminergic activity reduces clinical symptomatology. 6 references.

000724 Hammond, Nick V.; Gruzelier, John H. MRC Applied Psychology Unit, 15 Chaucer Road, Cambridge CB2 2EF, England **Laterality, attention and rate effects in the auditory temporal discrimination of chronic schizophrenics: the effect of treatment with chlorpromazine.** Quarterly Journal of Experimental Psychology (Cambridge). 30(1):91-103, 1978.

The effect of treatment with chlorpromazine on possible hemispheric differences in the auditory temporal discrimination of chronic schizophrenics was investigated. Nineteen male schizophrenic patients, ten male nonpsychotic patients, and 18 healthy male subjects were required to detect longer target tones from a sequence of short tones presented to either ear. The rate of stimulus presentation and the frequency of switches between the ears were varied. The schizophrenic patients were examined for 4 weeks while on standard clinical doses of chlorpromazine, for 4 weeks while on placebo, and for 4 weeks following reinstatement of medication. Lateral asymmetries in the performance of the schizophrenics were found to diminish in proportion to both the duration and the dosage of medication. The results are consistent with the hypothesis that chlorpromazine causes an improvement of left hemisphere performance relative to the right. The performance of the schizophrenics, relative to that of comparison subjects, deteriorated as the rate of stimulus presentation increased, supporting the hypothesis that schizophrenics have particular difficulties in response selection or organization. 29 references. (Author abstract modified)

000725 Herz, A.; Blasig, J.; Emrich, H. M.; Cording, C.; Piree, S.; Kolling, A.; von Zerssen, D. Max-Planck-Institut fur Psychiatrie, Kraepelinstrasse 2, D-8000 Munich 40, Germany **Is there some indication from behavioral effects of endorphins for their involvement in psychiatric disorders?** Advances in Biochemical Psychopharmacology. 18:333-339, 1978.

In studies of the possible involvement of endogenous opioid peptides in psychiatric disorders, the behavioral effects of opioid peptides were compared with those of opiate agonists in male Sprague-Dawley rats and the effect of naloxone on psychotic symptomatology was examined in schizophrenic patients. In rats, intraventricular injection of beta-endorphin, D-Ala2-Met-enkephalinamide, or D-Ala2-D-leu5-enkephalin resulted in a dose dependent, steep increase in analgesia and catatonia. Morphine also produced a steep dose response curve for analgesia but had only slight effects on catatonia. Etorphine and sufentanyl produced steep dose response curves for both analgesia and catatonia; the quantitative relationship between catatonia and analgesia for these two opiates was similar to that obtained for the opioid peptides. In clinical studies, a reduction in psychotic symptomatology was observed after naloxone as well as after placebo, but the effect of naloxone was more pronounced. The role of opioid peptides in the pathogenesis of schizophrenia is discussed. 17 references.

000726 Inanaga, Kazutoyo; Nakano, Tetsuo; Nagata, Toshiyasu; Tanaka, Masatoshi; Ogawa, Nobuya. Department of Neurophsychiatry, Kurume University School of Medicine, 67 Asahi-machi, Kurume, 830, Japan **Behavioral effects of protirelin in schizophrenia.** Archives of General Psychiatry. 35(8):1011-1014, 1978.

The effects of protirelin were compared with those of placebo in a multinstitutional, double-blind, controlled study of 143 chronic schizophrenic patients. Treatment with neuroleptics was continued during the study and 4mg protireline per day was administered orally for 14 days. Protirelin appeared to be significantly superior to placebo in the physicians' global ratings of efficacy. Increased motivation for work was isolated as a target effect but such symptoms as facial expression, emotional rapport, and psychomotor activity also appeared to be improved by addition of protirelin to the neuroleptics. Onset of the therapeutic effect of protirelin occurred within a week of medication in most of the patients who showed improvement. No adverse reactions were encountered. 11 references. (Author abstract modified)

000727 Issidorides, M. R.; Zioudrou, C.; Lykouras, E.; Stefanis, C. N. Department of Psychiatry, Eginition Hospital, 74, Vas. Sophias Ave., Athens University, Athens, Greece **Drug-induced changes in chromatin ultrastructure and nuclear basic proteins of the neutrophils of chronic schizophrenics.** Progress in Neuro-Psychopharmacology. 2(1):79-85, 1978.

Electron microscopic study of the neutrophils revealed that the chromatin of drug-free schizophrenics had a greater readiness to decondense than that of controls. Following treatment with pimozide for a month, the chromatin of most neutrophils acquired an increased resistance to decondensation. The electrophoretic pattern of the acid-extractable nuclear proteins of the neutrophils of drug-free chronic schizophrenics did not differ significantly from those of controls in number and intensity of the major bands. Administration of pimozide to these patients revealed several changes in their electrophoretic pattern, which tended to disappear when the drug was discontinued. 21 references. (Author abstract modified)

000728 Kramer, Milton; Roth, Thomas; Salis, Patricia J.; Zorick, Frank J.; Blackwell, Barry. Dept. of Psychiatry, University of Cincinnati, Cincinnati, OH 45221 **Relative efficacy and safety of loxapine succinate (Loxitane) and thioridazine hydrochloride (Mellaril) in the treatment of acute schizophrenia.** Current Therapeutic Research. 23(5):619-631, 1978.

The efficacy and safety of loxapine succinate were compared to those of thioridazine hydrochloride in a 4-week, double-blind study of 56 schizophrenic patients who were hospitalized with symptoms of acute onset. The efficacy of loxapine was similar to that of thioridazine, as indicated by ratings on the Brief Psychiatric Rating Scale, the Clinical Global Impression Scale, and the Nurses' Observation Scale for Inpatient Evaluation. There were few statistically significant differences between treatments, but oxapine was significantly more effective in reducing thought disturbance and anxiety/depression. Extrapyramidal side-effects and hypertension were more common in patients who receive loxapine, while anticholinergic effects, hypotension, synocope/dizziness, and electrocardiographic abnormalities were more common in those who received thioridazine. 22 references. (Author abstract modified)

000729 Lichtshtein, D.; Dobkin, J.; Ebstein, R. P.; Biederman, J.; Rimon, R.; Belmaker, R. H. Dept. of Physiology, Hadassah-Hebrew-University Medical School, Jerusalem, Israel **Gamma-aminobutyric acid (GABA) in the CSF of schizophrenic patients before and after neuroleptic treatment.** British Journal of Psychiatry (London). 132(February):145-148, 1978.

Gamma-aminobutyric acid (GABA) levels in the cerebrospinal fluid (CSF) of 17 drug-free schizophrenic patients were studied to determine the existence of GABA inhibitory neuron deficiency. GABA levels in the schizophrenic patients were compared with levels in nine normal individuals and with 10 of the same schizophrenic patients after neuroleptic treatment. There was no significant difference between CSF level of GABA in the control group compared to those in schizophrenic patients by any other criteria. No correlation was present between CSF levels of GABA and global psychopathology, psychomotor activity, clinical improvement, or whether the schizophrenic episode was acute or recurrent. After a mean of 2 months of neuroleptic treatment, there was a small but significant decline of 12% in mean GABA levels in the CSF. Although the dopamine hypothesis of schizophrenia suggests a possible role for GABA, direct evidence for the dopamine hypothesis in humans is lacking. 18 references. (Author abstract modified)

000730 Mackay, Angus V. P.; Doble, Adam; Bird, Edward D.; Spokes, Ernest G.; Quik, Maryka; Iversen, Leslie L. MRC Neurochemical Pharmacology Unit, Department of Pharmacology, Medical School, Hills Road, Cambridge, England **3H-Spiperone binding in normal and schizophrenic post-mortem human brain.** Life Sciences (Oxford). 23(5):527-532, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, a study of tritiated spiperone binding in the normal and schizophrenic postmortem human brain is described. Binding assays showed that 3H-spiperone binds saturably to areas of human and rat brain that are rich in dopamine (DA) or 5-hydroxytryptamine (5-HT). Cinanserin and 2-amino-6,7-dihydroxytetralin displaced 3H-spiperone selectively from 5-HT and DA receptor sites, respectively. An investigation of the DA and 5-HT receptor components of 3H-spiperone binding in nucleus accumbens samples from 26 postmortem schizophrenic brains failed to reveal any abnormality. 12 references. (Author abstract modified)

000731 Maricq, H. R. Medical University of South Carolina, Charleston, SC 29401 **Autonomic reactivity in schizophrenics and controls selected on the basis of a ""genetic marker."** Psychophysiology. 15(3):283, 1978.

A summary is presented of a report on a determination as to whether a better separation of schizophrenic and control subjects could be accomplished with respect to finger blood flow and galvanic skin response (GSR) recovery limb by using a biological marker for selection of study subjects, which was delivered to the 17th Annual Meeting of the Society for Psychophysiological Research, held in Philadelphia, October 1977. Plexus visualization score (PVS), a genetic characteristic of skin microvascular bed, was used as a marker. A study of 64 schizophrenics and 24 controls demonstrated that schizophrenics with high PVS have the slowest GSR recovery rates and the lowest finger blood flow rates of the groups. In the high PVS group, patients receiving medication had higher mean blood flows than those receiving placebos. The GSR responses were absent more often in patients on drugs. It is reported that a suggestion of a bimodal distribution into responders and nonresponders was apparent only in patients receiving medication. (Author abstract modified)

000732 McCreadie, Robin G.; Main, Christopher J.; Dunlop, Rosalyn A. Gartnavel Royal Hospital, 1055 Great Western Road, Glasgow G12 OXH, Scotland **Token economy, pimozide and chronic schizophrenia.** British Journal of Psychiatry (London). 133(August):179-181, 1978.

Response to a token economy was assessed in male chronic schizophrenic inpatients who were given, in a double-blind crossover trial, pimozide (up to 20mg daily) or chlorpromazine (up to 1,000mg daily), each for 3 months. After 6 months there was little change in the patients' mental state, but general ward behavior and token-rewarded target behaviors improved significantly. There were no statistically between drug differences, but the trend was that general ward behavior, but not token-rewarded behavior, improved more on pimozide. The patients who showed initiative and cooperated best with staff were those whose token-rewarded behavior was most satisfactory. 11 references. (Author abstract)

000733 no author. no address **Maintenance drugs for schizophrenia.** Lancet (London). 2(8095):879, 1978.

Maintenance drug therapy for schizophrenics after discharge is discussed. It has been demonstrated that pharmacological treatment of schizophrenia merely suppresses the symptoms, and that maintenance drugs are required after recovery from an acute episode. Studies of compliance with orally administered and injected drug regimes are reported. Compliance with oral antipsychotics was found to be adequate, but may be attributable to the more careful followup characteristic of clinical trials. It is suggested that oral drugs be tried when a patient is particularly averse to injections. 7 references.

000734 Okasha, M. S.; Hirsch, S. R.; Knights, Angela; Salih, Mohamed Ali. Department of Psychiatry, Yale University School of Medicine New Haven, CT 06510 **Flupenthixol and fluphenazine decanoate: a comparative review.** Psychiatric Annals. 8(7):51, 55-58, 67, 1978.

Research recently completed on fluphenazine decanoate is reviewed and findings compared with those reported for flupenthixol (which, while it cannot be prescribed in this country, has evoked favorable comments from clinicans everywhere). There is no strong evidence that flupenthixol decanoate or fluphenazine decanoate is superior for the treatment of schizophrenia. Evidence that flupenthixol tends to elevate mood while fluphenazine tends to depress it suggests that the former might be useful in the treatment of those schizophrenic patients who develop severe depressive symptoms during or following treatment with antipsychotic medications. It is further suggested that data indicate that flupenthixol may have a potency equal to injections of fluphenazine in the outpatient maintence of schizophrenics, with fewer side-effects. 41 references.

000735 Rappaport, Maurice; Hopkins, H. Kenneth; Hall, Karyl; Belleza, Teodoro; Silverman, Julian. Research Department, Agnews State Hospital, San Jose, CA 95114 **Are there schizophrenics for whom drugs may be unnecessary or contraindicated?** International Pharmacopsychiatry (Basel). 13(2):100-111, 1978.

It is reported that there are schizophrenics who do relatively well long-term without the routine or continuous use of antipsychotic medication. Eighty specially selected young males undergoing an acute schizophrenic episode were followed, after hospitalization, for up to 3 years. While hospitalized, they were assigned randomly to either placebo or chlorpromazine treatment. Many unmedicated while in hospital patients showed greater long-term improvement, less pathology at followup, fewer rehospitalizations, and better overall function in the community than patients who were given chlorpromazine while in the hospital. Factors related to posthospital outcome were good premorbid history and short lived paranoid characteristics. Considerations which may have an effect on the successful management of acute schizophrenic patients not on medication are mentioned. The findings underline the need for further study of how to utilize antipsychotic medication more selectively in the treatment of schizophrenia. 34 references. (Author abstract)

000736 Sargant, William. St. Thomas' Hospital, London, England **Giving schizophrenics a better chance.** Nursing Mirror (London). 147(8):26, 1978.

Major advances in the treatment of schizophrenia are briefly reviewed. Only 40 years ago there was no specialized treatment for schizophrenia: psychoanalysis was tried with little success and occupational therapy consisted of farm work. Since 1936, a new wave of physical treatments such as insulin coma, electroconvulsive therapy, and psychosurgery gained popularity. While this resulted in an improvement of about 50% of early schizophrenics, relapse was common and treatments required indefinite repetition. In 1952, introduction of the phenothiazines altered the whole mode of treatment. Combined use of drugs, electroconvulsive therapy, and modified sleep during the whole period of initial treatment has resulted in shortening the hospital stay of schizophrenic patients, and phenothiazines maintain the patient in the community. A recent advance in the treatment of so-called chronic deteriorating schizophrenics involves combining small doses of phenothiazine with therapeutic doses of lithium carbonate and possibly an antidepressant drug. With these new forms of treatment it should now be possible to quickly and successfully treat about 80% of schizophrenics.

000737 Schlosberg, Arie; Shadmi (Weber), Mira. Beer Ya'acov Psychiatric Hospital, Tel Aviv University Sackler School of Medicine, Beer Ya'acov, Israel **A comparative controlled study of two long-acting phenothiazines: pipotiazine palmitate and fluphenazine decanoate.** Current Therapeutic Research. 23(5):642-654, 1978.

Seventy-five hard core chronic schizophrenics received at random, after a washout period, fluphenazine, pipotiazine, and placebo in a double-blind study. At first, the medications were administered orally, and then the patients were given month-long-lasting injections for 15 months. Finally, the group of improved patients was divided in half, receiving either placebo injections or continuing with their medication. Patients were evaluated via the Brief Psychiatric Rating Scale, the Nurses' Observation Scale for Inpatient Evaluation, global clinical evaluation, social functioning, and patient's family's rating. Two patients receiving placebo, nine patients receiving fluphenazine decanoate, and nine patients receiving pipotiazine palmitate showed improvement. Analysis of these results was undertaken to determine favorable relative indications of each psychoactive drug for the specific psychiatric population and illness involved. 16 references. (Author abstract modified)

000738 Sedvall, Goran; Bjerkenstedt, Lars; Lindstrom, Leif; Wode-Helgodt, Birgitta. Laboratory of Experimental Psychiatry, Department of Psychiatry, Karolinska Institutet, S-104-01 Stockholm, Sweden **Clinical assessment of dopamine receptor blockade.** Life Sciences (Oxford). 23(5):425-429, 1978.

In a paper presented at the Janssen Symposium on Receptors of Dopamine Antagonists -- New Biochemical Approaches, held in Beerse, Belgium, July 1978, the effects of chlorpromazine (200-600mg/day), thiothixene (30mg/day), melperone (300mg/day), sulpiride (800mg/day), and clozapine (600mg/day) on central dopaminergic mechanisms in psychiatric patients with schizophrenic symptomatology are reported. All the drugs except clozapine elevated homovanillic acid (HVA) concentrations in cerebrospinal fluid (CSF) and prolactin concentrations in CSP and plasma, indicative of striatal dopamine receptor blockade. However, the significant reductions of psychotic morbidity in these patients were not correlated with the degree of dopamine receptor blockage in neostriatal and hypothalamic pituitary systems. Only in chlorpromazine-treated patients was there a significant correlation between the HVA concentration in CSF and morbidity during treatment. In chlorpromazine- and melperone-treated patients, the reduction in psychotic morbidity was correlated with significant reductions in 4-hydroxy-3-methoxyphenylethylene glycol concentration. Results indicate that dopaminergic mechanisms interact with noradrenergic mechanisms to produce the neuroleptic antipsychotic effect. 11 references.

000739 Shopsin, Baron; Klein, Helmfriedl. Department of Psychiatry, Neuropsychopharmacology Research Section, New York University-Bellevue Hospital Center, New York, NY **Clozapine: double-blind control trial in the treatment of acute schizophrenia.** Psychopharmacology Bulletin. 14(2):12-15, 1978.

Using a double-blind control design the effects of clozapine and chlorpromazine in treatment of acute schizophrenia were compared. After a placebo washout period of 7 to 14 days, the patients were treated in a fixed-dose buildup period of 7 days reaching a maximum of 300mg clozapine or 600mg chlorpromazine. This was followed by a 28-day flexible dosage period buildup to a maximum of 900mg/day of clozapine or 1800mg/day chlorpromazine. Analyses indicate that clozapine is significantly better than placebo and chlorpromazine is not consistent in showing improvement compared to the placebo group under all objective parameters measured. Clozapine showed a significant effect in ameliorating depressive symptoms as well, whereas, chlorpromazine had no effect on these symptoms. None of the patients receiving clozapine showed any indication of extrapyramidal symptoms. Several patients with tardive dyskinesia showed definite imrovement under clozapine treatment. Findings suggest that best treatment results are achieved under clozapine conditions. 10 references.

000740 Simpson, George M.; Lee, J. Hillary; Shrivastava, Ram K.; Branchey, Marc H. Rockland Research Institute, Orangeburg, New York **Baclofen in the treatment of tardive dyskinesia and schizophrenia.** Psychopharmacology Bulletin. 14(2):16-18, 1978.

The effect of baclofen in the treatment of tardive dyskinesia and schizophrenia was evaluated in chronic treatment-resistant schizophrenic patients (n=12). Baclofen was administered for up to 7-weeks, and there was a 1 week placebo washout in only a few patients. All medication was administered on a b.i.d. basis, and the dose schedule ranged from 10 to 120mg daily without any discernible improvement. In fact, the condition of ten pa-

tients worsened dramatically over the trial. The only side-effect which occurred during baclofen administration was an occasional mild tremor which did not appear to be dose related. Results suggest that baclofen is of no value in schizophrenia treatment. 4 references.

000741 Soskis, David A. Dept. of Psychiatry, 5-OPD, Temple University Health Sciences Center, 3401 N. Broad St., Philadelphia, PA 19140 **Schizophrenic and medical inpatients as informed drug consumers.** Archives of General Psychiatry. 35(5):645-647, 1978.

Twenty-five schizophrenic inpatients receiving antipsychotic medications were evaluated as informed and/or consenting drug consumers by means of a structured interview, and were compared with a matched group of medical inpatients receiving nonpsychotropic drugs. Medical patients were better informed about positive aspects of medication, such as name, dose, and relationship of drug treatment to a specific diagnosis. Schizophrenic patients, however, were significantly better informed about both side-effects and risks. Although both groups felt that their medication had helped them, 93% of the medical patients but only 56% of the schizophrenic patients said they would take the medication if they had the choice. The fact that schizophrenic inpatients readily shared their reluctance to take medication with an interviewer may offer an avenue for detection and intervention to improve prospects for outpatient compliance. 8 references. (Author abstract)

000742 Stier, C. S.; Elizur, A.; Yeret, A.; Davidson, S. Shalvata Psychiatric Centre, Sackler School of Medicine, Tel Aviv University, Hod-Hasharon, P.O.B. 94, Israel **Anti-autistic and anti-psychotic activity of pimozide in chronic schizophrenic patients undergoing acute exacerbations.** Current Therapeutic Research. (23(5):632-641, 1978.

An uncontrolled trial on 14 chronic schizophrenic patients with acute exacerbations, undertaken to evaluate the therapeutic specificity of the drug pimozide in combating the target symptoms of autism, apathy, emotional withdrawal, depression, delusions and hallucinations, is reported. Weekly evaluations were made by two psychiatrists independently during the 10-week study. In six out of 12 patients who finished the trial, marked improvement appeared in the second week, and they were fit to be discharged from the hospital at the end of the trial period and returned to social and occupational functioning. The main symptoms that showed improvement were: thought disorder, apathy, emotional withdrawal, motor retardation, depression, and somatic concern. Four patients failed to respond to the treatment. No ataractic effects were evident, and in two patients, the drug aggravated or even precipitated psychomotor agitation, anxiety, and tension. 17 references. (Author abstract modified)

09 DRUG TRIALS IN AFFECTIVE DISORDERS

000743 Abuzzahab, Faruk S., Sr.; Dahlman, Henry C. Department of Psychiatry, University of Minnesota Hospitals, Box 393 Mayo, Minneapolis, MN 55455 **Long-term effects of lithium carbonate on serum protein bound iodine in affective disorders.** Progress in Neuro-Psychopharmacology. 2(3):369-377, 1978.

Serum protein bound iodine (PBI) was assessed in 75 manic-depressive patients maintained on lithium (300mg three times daily) for an average of 15.9months. Pretreatment PBIs were available for 56 patients, and all patients returned for PBI every 3 months. The mean PBI of 56 patients dropped from 6.3microg% at pretreatment to 5.7microg% at the end of a mean of 12.2months. The mean PBI of 75 patients dropped from the first available mean of 6.5microg% at 2.6months to 5.9microg% at the final mean of 15.8months. Analysis of the mean change in PBI from pretreatment to the average of all values for each patient during each succeeding year showed a downward trend. The four patients who continued into the fourth year showed a mean drop of 2.2microg%. Analysis of mean change in PBI from pretreatment to 6 months for subgroups lasting different lengths of time on the study showed a downward trend correlated to the length of time on the study. Eleven patients who continued beyond 3 years showed a mean drop of 1.5microg%. 24 references. (Author abstract modified)

000744 Avery, David; Winokur, George. Psychochemistry Institute, Copenhagen, Denmark **Suicide, attempted suicide, and relapse rates in depression: occurrence after ECT and antidepressant therapy.** Archives of General Psychiatry. 35(6):749-753, 1978.

Suicide, attempted suicide, and relapse rates in 519 depressives were examined, comparing the effects of different treatments. After 6 months, suicide attempts were seen significantly less frequently in the electroconvulsive therapy (ECT) groups (0.8%) than in the antidepressant drug subgroup (7.0%). Fewer suicide attempts occurred in the ECT group compared to the antidepressant group among both in those who had attempted suicide prior to admission (0% vs. 10%) and in those who had not (1.1% vs. 3.6%). A history of attempted suicide showed a greater risk of both suicide (2.9%) in the following year and subsequent suicide attempt (5.9%). It is suggested that a depressive diagnosis may be as good a predictor of suicidal behavior as a history of attempted suicide. Relapse rates did not differ between treatment groups. 61 references. (Author abstract)

000745 Ballenger, James C; Post, Robert M.; Bunney, William E., Jr. Building 10, 9000 Rockville Pike, NIMH, Bethesda, MD 20014 **Carbamazepine in affective illness: an update. (Unpublished paper)** Bethesda, MD, NIMH, 1978. 29 p.

The use of carbamazepine as a potential psychotropic agent in the treatment of affective illness and schizophrenia was tested in a study of 15 patients with primary affective illness severe enough to require hospitalization. Ss were treated in a double-blind trial with daily doses of carbamazepine. Using global ratings of depression, mania, psychosis, anxiety, and anger, clinical response to the drug was assessed twice daily, as well as daily self-ratings of mood and side-effects and three times weekly nurse rated Brief Psychiatric Rating Scales. In the eight manic patients treated, five had antimanic responses to carbamazepine. Three patients had marked antimanic responses and one a partial antimanic response. All four had relapses on placebo substitution. One hypomanic patient had a marked positive response without relapse on placebo. Three manic patients failed to respond to carbamazepine. Detailed case reports of seven patients are discussed, including two patients who failed to respond to carbamazepine. Nine of the 15 patients appeared to respond favorably to the drug with either an antimanic, antidepressant, or prophylactic response. 77 references.

000746 Buchsbaum, M. S.; Lavine, R. A.; Davis, G. C.; Goodwin, F. K.; Murphy, D. L.; Post, R. M. Biological Psychiatry Branch, National Institute of Mental Health, Bethesda, MD 20014 **Effects of lithium on somatosensory evoked potentials and prediction of clinical response in patients with affective illness. (Unpublished paper)** Bethesda, MD, NIMH, 1978. 27 p.

Somatosensory evoked potentials (EPs) were recorded in 27 hospitalized inpatients with primary affective illness both during a medication-free baseline period and again after 2 or more weeks of lithium carbonate administration. Mood ratings by nurse raters were obtained daily during the double-blind placebo-controlled study. The early and late components of the somatosensory EPs were found to differ both in their change with

lithium and their efficacy for prediction of drug response. The early components that include the primary somatosensory EP showed larger amplitudes when patients were on lithium for nearly every patient studied. However, the amplitude increase was equal for clinical responders and nonresponders, and for bipolars and unipolars. In contrast, the magnitude of late components of off-medication EPs predicted subsequent clinical response to lithium. As was previously reported for visual EPs, in this independent sample of patients it was found that individuals whose somatosensory EPs showed marked increases in amplitude with increasing stimulus intensity were more likely to respond to lithium. A comparison of the bipolar/unipolar criterion with an EP criterion revealed that polarity successfully identified more responders, but the EP successfully identified more nonresponders, overall accuracy being approximately equal. It should be noted that the EP technique detected responders among the unipolar group. Several successful small scale replications of this EP effect suggest the possible utility of a larger clinical trial. 34 references. (Author abstract modified)

000747 Campbell, Magda; Schulman, David; Rapoport, Judith L. Department of Psychiatry, New York University Medical Center, 550 First Avenue, New York, NY 10016 **The current status of lithium therapy in child and adolescent psychiatry: a report of the Committee on Biological Aspects of Child Psychiatry of the American Academy of Child Psychiatry, December 1977.** Journal of the American Academy of Child Psychiatry. 17(4):717-720, 1978.

Categories where lithium therapy is or may possibly be useful in child and adolescent psychiatry are summarized and the degree of effectiveness (if any) is noted. In addition, recommendations to extend lithium therapy into other areas are considered, such as manic-depressive illness, emotionally unstable character disorder, aggressiveness, and hyperkinetic syndrome. 3 references.

000748 Carter, Susan Bonham; Sandler, M.; Goodwin, B. L.; Sepping, P.; Bridges, P. K. Bernhard Baron Memorial Research Laboratories, Queen Charlotte's Maternity Hospital, London W6 0XG, England **Decreased urinary output of tyramine and its metabolites in depression.** British Journal of Psychiatry (London). 132(February):125-132, 1978.

A group of 26 severely-depressed medication resistant patients and a group of 12 patients with moderately severe depression were subjected to oral tyramine loading to investigate the effects upon the level of conjugated and free tyramine. Free and total tyramine output levels, as well as p-hydroxyphenylacetic acid, were measured in urine samples from 12 controls, 12 moderately-depressed and 12 severely-depressed patients. Despite dramatic clinical improvement in about one-third of the severely-depressed patients after modified leucotomy, the relative decrease in conjugated and free tyramine output in both recovered and unchanged patients remained unchanged and abnormal one year after an oral tyramine load. The degree of apparent conjugation deficit was greater in the severely-depressed than in the moderately-depressed. There were no significant differences in p-hydroxyphenylacetic acid output by either severely or moderately depressed patients compared with controls. In addition, the response of severely depressed patients to monoamine oxidase inhibiting drugs was not indicative of conjugation deficit. Bodily metabolic failure is considered the most probable cause of decreased conjugated and free tyramine output, and may be similar to the defect in migraine. The 2 illnesses may represent a common predisposition which an appropriate triggering mechanism may transform to the florid disease. Biochemical detection of such vulnerability may have important diagnostic and predictive significance. 41 references. (Author abstract modified)

000749 Cocchi, Renato. v.le Liberta 21, I-61039 San Constanzo (PS), Italy **A syndrome from a possible GABA deficiency: clinical-therapeutic report on 15 cases.** Acta Psychiatrica Belgica (Bruxelles). 78(2):407-424, 1978.

Fifteen case histories of subjects showing signs of a depressive syndrome originating from a possible gamma-aminobutyric acid deficiency are described. Such a syndrome is believed to be characterized by a basic depressive state, the loss of the habit of stretching oneself, sleep disorders, mostly with early morning awakening, constipation, and nuchal headache. As a result of the very swift recovery of the patients after the administration of N-dipropylacetic acid, an inhibitor of GABA transaminase, the above symptoms have been attributed to a deficiency of GABA. 15 references. (Author abstract modified)

000750 Cox, John; Moore, George; Evans, Larry. Evans: Department of Psychiatry, University of Queensland, Brisbane, Queensland, 4029, Australia **Zimelidine: a new antidepressant?** Progress in Neuro-Psychopharmacology. 2(3):379-384, 1978.

An uncontrolled study of zimelidine in five patients diagnosed as suffering from endogenous depression is reported. Zimelidine is a new bicyclic compound that causes relatively selective inhibition of serotonin uptake and has little effect on noradrenaline uptake in the CNS. After 5 weeks of zimelidine, two patients resolved completely, two improved considerably, and one patient showed no change; the patient who showed no change had also failed to respond to previous treatment with doxepin and amitriptyline. Few side-effects were observed, and none were severe enough to warrant a change in treatment. Results suggest that zimelidine has sufficient antidepressant effects to justify a fullscale controlled clinical trial of the drug. 13 references. (Author abstract modified)

000751 Davidson, Jonathan; McLeod, Malcolm N.; Linnoila, Markku; Kurland, Albert A.; White, Helen L. Burroughs Wellcome Co., 3030 Cornwallis Rd., Research Triangle Park, NC 27709 **Platelet MAO inhibition following tricyclic antidepressant therapy.** American Journal of Psychiatry. 135(5):603-605, 1978.

The effects of imipramine and amitriptyline in depressed patients was investigated. The subjects were 15 hospitalized, depressed patients who received tricyclics (nine received imipramine and six received amitriptyline) for 3 weeks. Platelet monoamine oxidase (MAO) activity was measured before and after drug treatment. No consistent change was seen in MAO activity following tricyclic therapy. Inhibition of MAO activity was found to be unrelated to drug dose, to plasma level of tricyclics, and to the ratio of the parent compound to the demethylated metabolite. Improvement, defined as a decrease of at least 10 points on the Hamilton Scale, was found in six of nine patients given imipramine and four of six patients given amitriptyline. 10 references.

000752 Davidson, Jonathan; McLeod, Malcolm; Law-Yone, Byron; Linnoila, Markku. Burroughs Wellcome Co., Research Triangle Park, NC 27709 **A comparison of electroconvulsive therapy and combined phenelzine-amitriptyline in refractory depression.** Archives of General Psychiatry. 35(5):639-642, 1978.

Combined monoamine oxidase (MAO) inhibitor tricyclic antidepressant therapy and electroconvulsive therapy (ECT) were compared in a population of refractory depressive patients. Seventeen patients were randomly assigned to either of the treatment groups, and an independent observer was used to rate overall progress. Between 4 and 10 ECTs or a combination of phenelzine and amitriptyline were administered. Assays for MAO activity and plasma levels of amitriptyline and nortriptyline were performed. In both psychotic and neurotic depression, ECT was superior. When depression was accompanied by char-

acter disorder, the response was generally poor. Adequate levels of MAO inhibition were obtained, but tricyclic antidepressant levels were low. ECT is still considered to be the treatment of choice for severe depression, whereas the combination of low doses of phenelzine and amitriptyline were ineffective. 32 references. (Author abstract)

000753 de Souza, Fabio. no address **/Contribution to a new treatment of severe depressive states with intravenous drip infusion of dibenzepine./** Contribuicao ao novo tratamento dos estados depressivos graves com o cloridrato de dibenzepina injetavel, em timolepsia endoflebica gota a gota. Revisita Brasileira de Medicina (Rio de Janeiro). 35(4):260-272, 1978.

Twenty-eight patients suffering from depression were treated with dibenzepine. The group consisted primarily of 28 to 70-year-old White married males, all Brazilian. Most had already undergone treatment with other drugs, and most were in the first 2 years of their illness. The dibenzepine was administered orally and by injection. Injective treatment for 12 to 15 days was followed by a period of oral treatment. Oral treatment alone lasted 35 days. The criterion for evaluation was the score obtained on the Hamilton psychiatric rating scale for depression. Over 96% of the patients showed good or excellent results. A critique of the classification of antidepressive drugs is presented. A chemical profile is given of dibenzepine, which occupies a medial position between stimulants and sedatives. 29 references.

000754 Donnelly, Edward F.; Goodwin, Frederick K.; Waldman, Ivan N.; Murphy, Dennis L. William A. White Building, St. Elizabeths Hospital, Washington, DC 20032 **Prediction of antidepressant responses to lithium.** American Journal of Psychiatry. 135(5):552-556, 1978.

Fifty-three patients hospitalized for depression were examined to evaluate possible associations between pretreatment responses to the Minnesota Multiphasic Personality Inventory and behaviorally rated responses to lithium. Patients were randomly assigned to two groups (A and B) in which responders and nonresponders were balanced for sex. For the 18 women in group A, a lithium response scale discriminated responders with 89% accuracy. For the 9 males, a separate scale discriminated responders with 100% accuracy. In a cross-validation, the two scales discriminated responders and nonresponders with 100% accuracy in group B. The empirical methodology of this study suggests an alternative to the theoretical rational approach of predicting response to antidepressant drugs based on pretreatment depressive symptoms. 30 references. (Author abstract)

000755 Ehrensing, Rudolph H.; Kastin, Abba J. Department of Psychiatry, Ochsner, Medical Institutions, 1514 Jefferson Davis Highway, New Orleans, LA 70121 **Dose-related biphasic effect of prolyl-leucyl-glycinamide(MIF-I) in depression.** American Journal of Psychiatry. 135(5):562-566, 1978.

In a paper presented at the VII International Congress of the International Society of Psychoneuroendocrinology in Strasbourg, France, July 13-16, 1976, possible dose-related biphasic antidepressant effects of prolyl-leucyl-glycinamide(MIF-I) were investigated. Five of eight patients with unipolar or bipolar endogenous depressions taking MIF-I, 75mg/day, showed substantial improvement within a few days of beginning treatment compared with similar improvement in only one of ten receiving 750mg/day of MIF-I and only one of five patients taking placebo. The lower dose of MIF-I was associated with significantly greater improvement than both the higher dose and placebo on all of the rating scales used. It is suggested that an even lower dose of MIF-I, on the order of 0.1mg/kg, may have a greater effect as an antidepressant. 25 references. (Author abstract modified)

000756 Fuller, Ray W. Lilly Research Laoratories, Eli Lilly and Company, Indianapolis, IN 46206 **Selectivity among monoamine oxidase inhibitors and its possible importance for development of antidepressant drugs.** Progress in Neuro-Psychopharmacology. 2(3):303-311, 1978.

Selectivity among monoamine oxidase (MAO) inhibitors and its possible importance for the development of antidepressant drugs are discussed. MAO inhibitors may show a high degree of selectivity towards various MAO forms or toward the enzyme in specific tissues and cells. The combination of selective inhibitors with other drugs or with amines or amine precursors may enhance their selectivity. Most MAO inhibitors in clinical use were introduced before this selectivity was well understood, and little systematic effort has been directed toward development of MAO inhibitors with optimum therapeutic benefit and minimum side-effects based on selective actions. It is suggested that the potentials of MAO inhibitors in the treatment of depression and other disorders needs to be reassessed in light of current knowledge. 29 references. (Author abstract modified)

000757 Garcin, F. no address **Round table 2: biochemical and pharmacological typology of depression.** In: Deniker, P., Neuropsychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1107-1133).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the second round table session focused on the biochemical and pharmacological typology of depression. The effect of lithium in depressive subtypes and the clinical and biological characteristics of lithium-responsive depression were reported. Lymphocyte and erythrocyte antigens in the manic-melancholic mode and clinical paradoxes from typologies of depression were also discussed.

000758 Gelenberg, Alan J.; Klerman, Gerald L. Department of Psychiatry, Massachusetts General Hospital, Boston, MA 02114 **The effects of amitriptyline and lithium on a patient with 48-hour recurrent depressions.** Journal of Nervous and Mental Disease. 166(5):365-368, 1978.

A 61-year-old man with a 5-year history of 48-hour mood swings was treated with placebo, amitriptyline, and lithium carbonate in a double-blind trial. Placebo had no effect on his mood cycles, whereas amitriptyline lessened the amplitude of depression on bad days but did not affect the 48-hour periodicity. Lithium carbonate, however, terminated both affective symptoms and the cycle itself. After several months on lithium, the patient discontinued the drug, but neither symptoms nor cycles returned. 7 references. (Author abstract modified)

000759 Gillin, J. Christian; Wyatt, Richard Jed: Fram, David; Snyder, Frederick. Biological Psychiatry Branch, NIMH, Bethesda, MD 20014 **The relationship between changes in REM sleep and clinical improvement in depressed patients treated with amitriptyline.** Psychopharmacology (Berlin). 59(3):267-272, 1978.

EEG sleep recordings were obtained on consecutive nights from six hospitalized depressed patients before, during, and after treatment with amitriptyline. Amitriptyline significantly reduced time spent in rapid eye movement (REM) sleep and prolonged the REM latency throughout the treatment period. Three patients who improved during treatment showed a REM rebound when amitriptyline was discontinued, whereas three patients who did not improve showed no REM rebound. 20 references. (Author abstract modified)

000760 Hawkins, David M. Duke University Medical Center, Box 3812, Durham, NC 22710 **Reactive affective cycles and lithium: a caveat.** Journal of Clinical Psychiatry. 39(8):667-669, 1978.

Reactive depressive episodes resulting from cyclic patterns of interpersonal behavior and inappropriately treated with lithium are discussed. Two case reports are given to demonstrate the phenomenon of reactive cycles, their clinical presentations, and the problems arising from treatment with medications. The structure of cycles of interpersonal behavior and their presentation in therapy are described and treatment strategies are suggested. It is suggested that psychiatrists must assess candidates for lithium therapy carefully and learn to differentiate between those whose affective cycles are biologically triggered and those whose affective changes are secondary to cyclic interactional patterns. 4 references. (Author abstract modified)

000761 Kirkegaard, Carsten; Bjorum, Niels; Cohn, Dorte; Lauridsen, Ulrik Birk. Department of Medicine E, Frederiksberg Hospital, DK-2000, Copenhagen F, Denmark **Thyrotrophin-releasing hormone (TRH) stimulation test in manic-depressive illness.** Archives of General Psychiatry. 35(8):1017-1021, 1978.

The thyrotrophin (TSH) response to thyrotrophin releasing hormone (TRH), 200 micrograms administered intravenously, was studied in 19 patients with unipolar depression, 12 with bipolar depression, 14 with mania, and 5 with mixed manic-depressive illness. The TSH responses were decreased in all of these affective disorders compared to those found in 10 patients with reactive depression, and 60 controls. The decrease of the TSH response in manics could not be accounted for by the effects of neuroleptic drugs. The TSH response in the groups with reactive depression, reactive paranoid psychosis, and neurotic depression, respectively, did not differ significantly from that found in controls. With the exception of a decrease in serum triiodothyronine (T3) level and free T3 index in the manics, no significant differences in serum T3 level or in free T3 and thyroxine (T4) indexes were found between the groups. Changes found in serum T4 level were due to changes in the thyroxine binding proteins. 19 references. (Author abstract)

000762 Lapierre, Y. D.; Butter, H. J. Dept. of Psychiatry, Ottawa General Hospital, 197 Cumberland, Ottawa, Ontario K1N 7H4, Canada **Imipramine and maprotiline in agitated and retarded depression: a controlled psychiatric and psychophysical assessment.** Progress in Neuro-Psychopharmacology. 2(2):207-216, 1978.

The effects of imipramine and maprotiline in 20 agitated and 20 retarded depressives were investigated via the Hamilton Depression Scale, Zung Self-Rating Scale, Visual Analogue Scale, electrodermal activity measurement, digital plethysmography, and measurement of alpha rhythm, reaction times, and movement times. Psychiatric ratings did not demonstrate significant drug differences. There were trends to indicate that maprotiline may be more beneficial to agitated depressives. After 28 days of treatment, there were no significant differences between the two drugs in the two clinical types of depressions. Digital plethysmographic orienting response reflected the more pronounced norepinephrine reuptake inhibition of maprotiline. Data suggest that maprotiline and imipramine have equivalent antidepressant activity. 7 references. (Author abstract modified)

000763 Linnoila, Markku; Dorrity, Floyd J.; Jobson, Kenneth. Department of Psychiatry, Duke University Medical Center, Box 2921, Durham, NC 27710 **Plasma and erythrocyte levels of tricyclic antidepressants in depressed patients.** American Journal of Psychiatry. 135(5):557-561, 1978.

Plasma and red blood cells (RBCs), amitriptyline, nortriptyline, imipramine, desipramine, doxepin, and desmethyl doxepin levels were measured in depressed inpatients during steady state kinetics. A strong positive correlation between the drug levels in plasma and RBCs was found for amitriptyline, nortriptyline, desipramine, and desmethyl doxepin. However, at a given plasma level, up to a6-fold interindividual variation in the RBC drug levels was found. The correlations between plasma and RBC imipramine and doxepin levels were low. The interindividual variation in the RBC plasma tricyclic level ratios was large enough to warrant further clinical studies on the relationship between efficacy and pharmacokinetics of tricyclic antidepressants. 20 references. (Author abstract)

000764 Lippmann, Steven. Department of Psychiatry and Behavioral Sciences, University of Louisville, Louisville, KY 40208 **Depression -- a good approach for the non-psychiatrist. II -- treatments of choice.** Resident & Staff Physician. 24(7):100-104, 1978.

Approaches for the treatment of acute mild depression, moderate depression, and severe depression are outlined for primary care physicians. Characteristics and indications of the major tranquilizers, benzodiazepines, lithium, stimulants, and monoamine oxidase inhibitors are summarized in a tabular format. Hospitalization and aggressive use of tricyclic antidepressants is recommended for patients with the most severe depressions. It is asserted that mild grief reaction depressions can be resolved with counseling and an extremely short course of medication.

000765 Mandel, Michel R.; Klerman, Gerald L. Harvard Medical School, Boston, MA 02115 **Clinical use of antidepressants, stimulants, tricyclics, and monoamine oxidase inhibitors.** In: Clark, W., Principles of psychopharmacology. 2nd ed. New York, Academic Press, 1978. 976 p. (p. 537-551).

The antidepressant action of clinically-used stimulants, tricyclics, and monoamine oxidase inhibitors (MAOI's) is examined. Topics discussed are: clinical evaluation of depression; current diagnostic dilemmas; gradients of severity as guides to pharmacotherapy; amphetamines and related psychomotor stimulants; MAOI's; tricyclic antidepressants; comparison of tricyclic antidepressants and electroconvulsive therapy; comparison of MAOI's and tricyclics; combination of phenothiazines and tricyclics; benzodiazepines and tricyclics; hormonal interrelations with antidepressant treatment; combination with MAOI's; and antihypertensive agents. Conclusions suggest that these drugs cause significant antidepressant effects in moderate proportions of depressed patients, although there remain unresolved issues as to the limits of their therapeutic efficacy and the range of their possible toxicity. 23 references.

000766 Mindham, R. H. S. University of Leeds, 15 Hyde Terrace, Leeds, LS 2 9LT, England **The use of drugs in the prevention of relapse in affective disorders.** International Journal of Mental Health. 6(4):88-103, 1978.

The use of drugs in the prevention of relapse in affective disorders is discussed with reference to a review of the relevant research involving tricyclic antidepressants, phenothiazines, lithium salts, and electroconvulsive therapy. Evidence suggests that both lithium salts and tricyclic antidepressants reduce the relapse rates in patients who have recovered from manic-depressive illnesses. It was found that in preventing depressive relapses, the two drugs are of similar potency, although the lithium salts are more effective in preventing manic relapses. 33 references.

000767 Murphy, Dennis L.; Campbell, Iain C.; Costa, Jonathan L. Clinical Neuropharmacology Branch, NIMH, Bethesda, MD 20014 **The brain serotonergic system in the affective disorders.** Progress in Neuro-Psychopharmacology. 2(1):1-31, 1978.

The role of central serotonergic systems in affective disorders is discussed. Reduced 5-hydroxyindoleacetic acid levels in the

cerebrospinal fluid of depressed patients and reduced brain serotonin concentrations in postmortem studies of suicides suggest that brain serotonergic systems are altered in these individuals. Other investigations of serotonin-related functions in depressed patients have yielded equivocal results, however. The potentiation of the therapeutic effects of antidepressants by L-tryptophan and reversal of these effects by p-chlorophenyalanine in clinical studies support animal pharmacological evidence indicating that antidepressant drugs act in part via serotonergic mechanisms. Nonetheless, the biochemical basis for the suggested serotonergic alterations in the affective disorders is unclear. Additional research is needed on the storage, transport, and synthesis of indoleamines; adaptational mechanisms within the system and their relationships to other neurotransmitter systems; and correlations with behavior in animals and man. 147 references. (Author abstract modified)

000768 Muscettola, Giovanni; Goodwin, Frederick K.; Potter, William Z.; Claeys, Magda M.; Markey, Sanford P. Clinical Psychobiology Branch, National Institute of Mental Health, Bethesda, MD 20014 **Imipramine and desipramine in plasma and spinal fluid.** Archives of General Psychiatry. 35(5):621-625, 1978.

In a double-blind study of depressed patients treated with imipramine hydrochloride, levels of imipramine and desipramine were measured in plasma and in cerebrospinal fluid (CSF). Levels of both drugs in CSF were approximately 10% of plasma levels, but the levels in the two body fluids were highly correlated. Levels of both drugs were approximately equal in plasma, but desipramine predominated in CSF. The imipramine induced alteration in CSF levels of the serotonin metabolite correlated with imipramine levels, but not with desipramine. For the group of patients showing a clear antidepressant response, the mean drug levels were nearly double those of the nonresponder group. Desipramine levels showed no responder/nonresponder difference, while the ratio of imipramine/desipramine was significantly higher among the responders. On the average, this particular patient group had relatively low pretreatment levels of 5-hydroxyindoleacetic acid in CSF, an observation that may partially account for the relatively low overall response rate to imipramine. 34 references. (Author abstract modified)

000769 Newman, Richard A. Psychiatric Services, Paoli Memorial Hospital, Paoli, PA 19301 **An overview of commonly-available antidepressant therapy.** Behavioral Medicine. 5(8):13-16, 1978.

Characteristics of major antidepressant agents and their common dosages are described in an overview of antidepressant therapy. Depressive symptoms are divided into three groups characterized by lethargy, agitation, and guilt. A chart is provided which lists common antidepressants such as sedating and nonsedating tricyclics, monoamine oxidase inhibitors, and alkali metal salt agents with their indications, contraindications, actions, and usual dosages. It is concluded that today's pharmacologic choices enable every knowledgeable practitioner to aid many depressed patients effectively. 1 reference.

000770 O'Hara, H.; O'Hara, J.; Valle-Jones, J. C.; McGhie, R. L.; Brodie, N. H.; Schiff, A. A. no address **Maprotiline and fluphenazine/nortriptyline in depression.** Practitioner (London). 221(1323):419-423, 1978.

The effectiveness of maprotiline and fluphenazine/nortriptyline was compared for a variety of depressive states. A total of 67 patients were tested in a double-blind study. Physicians' clinical ratings, self-assessments of anxiety and depression, and side-effects were obtained before and after four weeks of treatment. Fluphenazine/nortriptyline was found to have a greater antidepressant effect than maprotiline, as well as greater effectiveness in relieving anxiety. Side-effects from maprotiline were more severe than those from fluphenazine/nortriptyline. It is concluded that fluphenazine/nortriptyline has more advantages in the treatment of depression than does maprotiline. 12 references.

000771 Perez Upegui, Pablo. Hospital Mental de Antioquia, Carrera 76, No. 34-A-73, Medellin, Colombia /**A double-blind study comparing the antidepressive action of lofepramine and imipramine.**/ Estudio doble ciego comparando la accion antidepresuva de la lofepramina y la imipramina. Revista Colombiana de Psiquiatria (Bogota). 7(2):137-145, 1978.

Forty patients with various depressive disorders participated in a double-blind experiment in which the Hamilton depression scale was used to compare the therapeutic effects of imipramine with those of a new tricyclic derivative, lofepramine. A methodology was used which permitted the interaction of the pharmacological factor with psychotherapeutic intervention. The chemical structures of the two compounds are discussed and illustrated in a chart. Both drugs were judged to have shown a high level of effectiveness, but lofepramine was 10% more effective than imipramine. In addition, 20% of the patients treated with lofepramine ended the treatment with complete disappearance of symptoms, which was not the case with imipramine. Secondary effects common to tricyclic drugs were noted with both compounds, but some of these, such as constipation and perspiration, were much less evident with lofepramine. 12 references.

000772 Puig-Antich, Joaquim; Blau, Stephen; Marx, Nola Columbia University, College of Physicians and Surgeons, New York, NY 10032 **A pilot open trial of imipramine in prepubertal depressive illness.** Psychopharmacology Bulletin. 14(2):40-42, 1978.

A pilot open trial of imipramine in prepubertal depressive illness is described. Subjects were a sample of 13 children fitting Research Diagnostic Criteria for major depressive disorder in adults. Preliminary data were obtained on the clinical picture, on family history, and on the response to imipramine. All subjects had the full clinical picture of adult major depressive disorder, most had family histories positive for affective disorder and alcoholism and showed improvement on imipramine. Findings suggest that prepubertal depressive illness might be basically the same disorder occurring at different points in development. 8 references.

000773 Quitkin, Frederic; Rifkin, Arthur; Kane, John; Ramos-Lorenzi, Jorge R.; Klein, Donald F. New York State Psychiatric Institute, 722 West 168th Street, New York, NY 10032 **Prophylactic effect of lithium and imipramine in unipolar and bipolar II patients: a preliminary report.** American Journal of Psychiatry. 135(5):570-572, 1978.

The possibility that lithium is prophylactic in unipolar or bipolar II patients or that it prevents recurrence of depression in bipolar I patients was investigated. Relapse rates of the first 35 unipolar and bipolar II manic-depressive patients who entered the controlled phase of continuing evaluation of the prophylactic value of lithium alone or in combination with imipramine were analyzed. Lithium had a prophylactic effect in unipolar patients and possibly in bipolar II patients. Imipramine did not have a prophylactic effect in either group of patients. 27 references. (Author abstract modified)

000774 Quitkin, Frederic; Rifkin, Arthur; Klein, Donald F. Office of Research Development, New York State Psychiatric Institute, 722 West 168th Street, New York, NY 10032 **Imipra-**

mine response in deluded depressive patients. American Journal of Psychiatry. 135(7):806-811, 1978.

The influence of delusions and other psychotic features upon outcome of treatment with imipramine in patients with primary depression is examined. Global improvement scale scores of 13 patients randomly assigned to placebo and 21 to imipramine treatment indicated a significant main drug effect, but the interaction of drug effect and pretreatment psychotic state was not significant. This indicates that imipramine is an effective treatment in depressive illness, regardless of pretreatment evidence of psychosis. This finding does not support a recent report suggesting that deluded depressive patients should not be treated with imipramine. Possible explanations of the discrepancy between these two studies are discussed. 11 references. (Author abstract modified)

000775 Ramsey, T. A.; Mendels, J. Department of Psychiatry, University of Pennsylvania, School of Medicine and Veterans Administration Hospital, Philadelphia, PA **Lithium-responsive depressive illness: clinical and biological characteristics.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1117-1124).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the clinical and biological characteristics of lithium-responsive depressive illness were discussed. Almost all studies show that a larger proportion of bipolar than unipolar patients respond to lithium therapy, but lithium treatment is also effective in a subgroup of unipolar patients. Researchers are now attempting to find distinctive biological or clinical characteristics that distinguish responders from nonresponders. Investigations of the visual average evoked response, lumbar spinal fluid 5-hydroxyindoleacetic acid, plasma calcium/magnesium ratio, platelet serotonin uptake and monomine oxidase activity, plasma and erythrocyte lithium ratio, family history, personality traits, and symptom profiles of lithium responsive patients were summarized. 31 references. (Author abstract modified)

000776 Reilly, Peter P. 950 Smith Street, Providence, RI 02908 **Depression and its treatment.** Rhode Island Medical Journal. 61(2):59-68, 1978.

The etiology, types, and recommended treatments for depression are reviewed. Nine different types of depression are discussed. Management of endogenous depression is facilitated by the judicious use of antidepressants. Guidelines in the medical management of depression are given. Depression is viewed as a feedback of three sets of variables at chemical, experimental, and behavioral levels. Four systems are considered related: 1) reinforcement, 2) stress factors, 3) arousal, and 4) psychomotor. The effects of certain medications on neurotransmitters are listed. The possible side-effects of a variety of drugs and their effectiveness are discussed. It is recommended that medication be accompanied by therapy, that a single dose regime is initiated to avoid complications and to increase the reliability of compliance, and that the family and close friends cooperate to prevent further depressions. 14 references.

000777 Reilly, Peter P. 950 Smith Street, Providence, RI 02908 **Efficacy of lithium carbonate in alcoholism: case studies.** Rhode Island Medical Journal. 61(2):86-91, 1978.

Data and clinical case studies, which demonstrate the efficacy of lithium carbonate with three chronic alcoholics who were endogenously depressed and with family histories of both illnesses, are presented. Three patients, two men and one woman ranging in age from 29 to 45, were intractable to other treatment modalities. Once placed on lithium carbonate they were asked to refrain from any ingestion of alcohol, to agree to take their lithium as scheduled, and to have tests of serum lithium levels at regular intervals. Initially all patients were started on lithium carbonate 300mg twice daily and dosages were subsequently increased. Although the course of the treatment differed for all three patients, each experienced a lessening of depression and an end to chronic alcoholism. It is suggested that one of the reasons these patients were successful was that each had a family member or friend who supported him/her during treatment. It is concluded that coercion of the alcoholic into treatment is unreliable and that family concern for the patient can make a great difference between success and failure in using lithium carbonate. 4 references.

000778 Steiner, M.; Radwan, M.; Elizur, A.; Blum, I.; Atsmon, A.; Davidson, S. Mental Health Research Institute, University of Michigan, Ann Arbor, MI 48109 **Failure of L-triiodothyronine (T3) to potentiate tricyclic antidepressant response.** Current Therapeutic Research. 23(5):655-659, 1978.

In a double-blind study, imipramine and L-triiodothyronine (T3) was compared with imipramine and placebo and with electroconvulsive therapy (ECT) given over a period of 5 weeks to 12 female depressed patients divided into three groups. There were no significant differences between the antidepressant effect of the three modalities of treatment. Significant clinical improvement was found in 75% of the patients regardless of the treatment modality. 14 references. (Author abstract)

000779 Tsutsui, Sueharu. Second Dept. of Internal Medicine Toho University School of Medicine, 6-11-1, Ohmori-Nishi, Ohtaku Tokyo, 143 Japan **Depression in the field of internal medicine -- autonomic and endocrinological aspects.** Japanese Journal of Psychosomatic Medicine (Fukuoka.) 18(1):72-78, 1978.

At a symposium, ""Depression in Various Specialties of Medicine," sponsored by the 18th Annual Congress of the Japanese Society of Psychosomatic Medicine in Karume City, May 1977, a paper was presented in which depression accompanied by marked somatic symptoms was studied from the standpoint of autonomic nervous function and endocrinology. Autonomic nervous function was recorded by means of microvibration. The endocrinological investigation was conducted with the use of the thyrotropin-releasing hormone (TRH) test to examine pituitary thyroid function. Sixty-two percent of the patients showed autonomic dysfunction. When autonomic functions and psychic symptoms were compared, beta-dominant waves, which are considered as vagotonia in microvibration, increased more significantly in the patient with retardation than in those without retardation. No abnormality in T3, T4, and T3-RSU was found in the endocrinological test. However, low thyroid-stimulating hormone (TSH) response to TRH appeared in the patients with protracted depression. The combined use of the antidepressant, clomipramine, and a small amount of T3 proved to be effective for the improvement of the symptoms as well as for the normalization of TSH response to TRH. The use of T3 did not cause any side effects. 25 references. (Journal abstract modified)

000780 Valle-Jones, J. C. no address **Pemoline in the treatment of psychogenic fatigue in general practice.** Practitioner (London). 221(1323):425-427, 1978.

The effectiveness of pemoline in the treatment of psychogenic fatigue and depression was investigated. A total of 43 housewives presenting with severe psychogenic fatigue were treated with either pemoline or a placebo in a double-blind design. The patients treated with pemoline showed significantly more improvement than those treated with placebo. Physician assessments and daily records kept by the patients confirmed the findings. No side-effects were reported or observed. Most of the pa-

tients reported improvement after 3 weeks of treatment. It is concluded that pemoline provides an effective, safe, and nonaddictive alternative to tranquilizers and antidepressants for patients presenting fatigue and depression not associated with an organic cause. 7 references.

000781 Von Scotti, Harald. Psychiatry Department, University of Nebraska Medical Center, Omaha, NE 68101. **Manic depressive psychosis: diagnosis and treatment.** Nebraska Medical Journal. 63(9):301-303, 1978.

Manic-depressive psychosis, an affective disorder of unknown etiology, is described, and diagnostic and treatment approaches are discussed. The disorder consists of three major subtypes: manic, depressed, and circular type. The manic type consists exclusively of manic episodes of elation, flight of ideas, and increased motor activity. The unipolar depressed type of mania consists exclusively of depressed episodes. The circular, or bipolar, type is distinguished by a history of at least one attack of both a depressive and a manic episode. The physician needs to make a careful investigation of family history, developmental experiences, premorbid personality structure, and the onset of the illness. Some features of manic-depressive illness distinguishing it from other types of illnesses are described. Treatment with neuroleptic drugs, electroconvulsive therapy, and lithium, or a combination of these agents or regimens, is discussed.

000782 Watt, J. A. G. Gartnavel Royal Hospital, Glasgow, Scotland **The place of ECT in the treatment of depression.** Scottish Medical Journal (Glasgow). 23(1):68-69, 1978.

In a paper presented at the Scottish Symposium on Depression, held in Glasgow, September 1977, indications for the use of electroconvulsive therapy (ECT) in depression are discussed. A survey of the literature reveals that ECT is more often effective in the treatment of depression than are tricyclic antidepressants, monoamine oxidase inhibitors, or placebo. The legal rights and obligations regarding informed consent procedures are enumerated. It is asserted that ECT is more effective in endogenous depression than in reactive depression, but that clinical predictors of success with ECT have not been found. Side effects of ECT are identified as impaired memory and temporary headache and confusion. It is suggested that in cases where drug therapy would be equipotent, drug therapy should be utilized for the less disabled patients. 4 references. .

000783 Whitford, G. Mervyn. Medical Division, Warner Lambert, Chestnut Ave., Eastleigh, Hampshire, SO5 3ZQ, England **Acetylator phenotype in relation to monoamine oxidase inhibitor antidepressant drug therapy.** International Pharmacopsychiatry (Basel). 13(2):126-132, 1978.

Research findings concerned with monoamine oxidase inhibitor antidepressant drug phenelzine are reviewed. Phenelzine has a molecular structure closely related to drugs known to be acetylated, specifically isoniazid. Acetylator phenotype is genetically determined and shows wide variation between different ethnic groups. Studies have indicated that acetylator phenotype could be a major factor as a determinant of response to phenelzine therapy. The implications for other (nonpsychotropic) drug therapy are briefly examined. 26 references. (Author abstract modified)

000784 Wirz-Justice, Anna; Puehringer, Wolfgang. Clinical Psychobiology Branch, NIMH, 9000 Rockville Pike, Bethesda, MD 20014 **Chronic treatment with clomipramine or maprotiline depletes platelet serotonin and modifies its diurnal rhythm.** Progress in Neuro-Psychopharmacology. 2(2):217-224, 1978.

Endogenous depressive patients were treated with clomipramine (a predominantly 5-HT uptake inhibitor) or maprotiline (a selective noradrenaline uptake inhibitor), and the level and diurnal rhythm of platelet 5-HT was assessed. Platelet 5-HT rapidly decreased after clomipramine to a minimum (20% pretreatment values) within 2 weeks, and an abnormal 5-HT diurnal rhythm tended towards the control pattern or was abolished. Unexpectedly, after maprotiline, a transient increase in 5-HT was followed by a decrease; the abnormal 5-HT diurnal rhythm was exaggerated. The effect of maprotiline on platelet 5-HT was probably secondary. Platelet 5-HT measurements may be useful as an indirect estimation of clomipramine plasma level and efficacy of uptake inhibition; the therapeutic effect may, however, be less related to this presynaptic event than long-term postsynaptic changes in receptor sensitivity modifying abnormal 5-HT rhythms. 19 references. (Author abstract modified)

000785 Wood, Keith; Harwood, Janet; Coppen, Alec. Medical Research Council Neuropsychiatry Laboratory, West Park Hospital, Epsom, Surrey KT19 8PB, England **The effect of antidepressant drugs on plasma kynurenine in depressed patients.** Psychopharmacology (Berlin). 59(3):263-266, 1978.

The levels of kynurenine in the plasma of depressed patients and control subjects were not significantly different and were not influenced by age or sex. The severity of affective disturbance was not related to plasma kynurenine levels in depressed patients, and clinical outcome could not be predicted by measurement of plasma kynurenine levels. Amitriptyline did not significantly increase plasma kynurenine concentration in vivo, whereas lithium and mianserin did have a significant effect. Results are discussed with reference to known abnormalities of tryptophan metabolism in depressive patients, particularly the 5-hydroxytryptamine uptake characteristics of blood platelets in these patients. 25 references. (Author abstract modified)

000786 Ziegler, Vincent E.; Biggs, John T.; Rosen, Samuel H.; Meyer, David A.; Preskorn, Sheldon H. Washington University School of Medicine, Department of Psychiatry, 4940 Audubon Avenue, St. Louis, MO 63311 **Imipramine and desipramine plasma levels: relationship to dosage schedule and sampling time.** Journal of Clinical Psychiatry. 39(8):660-663, 1978.

The effectiveness of a single daily dose of imipramine and desipramine was examined. The relationship between sampling time, tricyclic plasma levels and differences in the clinical effects in patients treated on two different dosage schedules was presented. Plasma levels were determined after the administration of imipramine to 11 patients and of desipramine to 10 patients as a single daily bedtime dose or in divided doses. It is reported that plasma levels were relatively stable on both schedules. No differences were found in therapeutic effectiveness of severity of side effects. It is reported that the majority of the patients preferred the single dose schedule, and that these findings support the use of a single daily dose of imipramine and desipramine. 17 references. (Author abstract modified)

10 DRUG TRIALS IN NEUROSES

000787 Brown, Ben Maurice. University of Arizona, Tucson, AZ 85721 **Depression in college students: a retrospective study of diagnostic, demographic, and treatment outcome variables.** Journal of the American College Health Association. 27(1):52, 1978.

At the 56th Annual Meeting of the American College Health Association held in New Orleans, March 1978, a study was presented in which 267 charts of outpatients seen during three consecutive months of 1977 by a university mental health clinic were retrospectively reviewed for reports of depression. Of the students seen during this period, 76 were noted to present significant symptoms and signs of depression. Charts of depressed patients were further analyzed for diagnostic categories, demographic data, and treatment outcome results.

The majority of depressed patients were diagnosed as having depressive neurosis or adjustment reaction. Adjustment reaction patients were usually treated with psychotherapy alone and showed symptomatic improvement in half of the cases. Vegetative signs, especially sleep disturbance were noted in half of the patients with depressive neurosis. These patients were often treated with tricyclic antidepressants plus psychotherapy, which resulted in significantly greater improvement in both dysphoria and vegetative signs than treatment with psychotherapy alone. Treatment outcomes for depressed patients thought to have concomitant character disorders were uniformly poor. Thus, the subjects represent several distinct diagnostic groups, of which those with depressive neurosis show optimal treatment outcomes following tricyclic antidepressant therapy. (Journal abstract modified)

000788 Camara, Jose Carlos; Salin, Sebastiao Abrao. no address **/Evaluation of a new psychotropic drug -- Trazodone -- in patients with anxiety neurosis and depressive anxiety./** Avaliacao de um novo psicofarmaco -- Trazodone -- em pacientes com neurose de ansiedade e ansioso-depressivos. Revista Brasileira de Medicina (Rio de Janeiro). 35(4):235-237, 1978.

Thirty-seven patients with anxiety neurosis and depressive anxiety with several forms of somatization were treated for a 3-week period. Seventeen received the ansiolitic Trazodone 75 mg/day, and 20 received a placebo. The patients were randomly chosen from a single Brazilian hospital mental ward. The evaluation was carried out through weekly psychiatric interviews, using the Hamilton scale for anxiety. Females in both treatment groups outnumbered men substantially. Of the patients treated with the active substance, an adequate response was obtained in 15, of whom 12 became asymptomatic. In the placebo group only 8 out of 20 showed an adequate response. No mentionable side-effects were observed. The therapeutic effect of Trazodone appeared markedly from the seventh day of treatment. Verification of its positive effect coincides with the findings of other authors. 11 references. (Journal abstract modified)

000789 Cecchini, S.; Petri, P.; Ardito, R.; Bareggi, S. R.; Torriti, A. Divisione di Neuropsychiatria, Ospedale Civile, Lucca, Italy **A comparative double-blind trial of the new antidepressant caroxazone and amitriptyline.** Journal of International Medical Research (Northampton). 6(5):388-394, 1978.

The antidepressant effects of caroxazone were compared to those of amitriptyline in a 3-week double-blind trial in 40 patients with neurotic or anxious neurotic depression. Both drugs produced a significant improvement in symptom scores on the Hamilton Rating Scale for Depression within 7 days. No significant differences were found between the two drugs in antidepressant action or in incidence and severity of side-effects. It is concluded that caroxazone is an effective and well-tolerated drug for the treatment of depression. 21 references. (Author abstract modified)

000790 Herrington, R. N. University Department of Psychological Medicine, Southern General Hospital, Glasgow, Scotland **L-tryptophan in the treatment of depressive illness.** Scottish Medical Journal (Glasgow). 23(1):63-65, 1978.

In a paper presented at the Scottish Symposium on Depression, held in Glasgow, Scotland, September 1977, the evaluation of L-tryptophan as a treatment for depression is discussed. L-tryptophan is an aminoacid from which 5-hydroxytryptamine (5-HT) is naturally synthesized. It has been hypothesized that cerebral 5HT deficiency in depressed patients is corrected by intake of L-tryptophan. It is asserted that L-tryptophan has no danger associated with prolonged use, few side-effects, and no danger associated with overdosage. In a comparison of L-tryptophan to electric shock therapy and amitriptyline, it was found that L-tryptophan was inferior to electric shock in more disturbed patients and equivalent to amitriptyline in less disturbed patients. It is concluded that L-tryptophan boosts 5HT synthesis in the brain but that its functional effect is doubtful. 13 references.

000791 Nakano, Shigeyuki, Gillespie, Hamp K.; Hollister, Leo E. Department of Pharmacology, Ehime University School of Medicine, Japan **Propranolol in experimentally-induced stress.** Psychopharmacology (Berlin). 59(3):279-284, 1978.

The beta-adrenergic receptor blocking drug, d,l-propranolol, was compared with placebo for relief of experimentally-induced anxiety in 24 paid male volunteers with high levels of trait anxiety. Stress was induced experimentally by two performance tests. Single 40mg doses of propranolol significantly slowed heart rate but were not superior to placebo on any other measure. Single 5mg doses of diazepam showed a clear antianxiety effect in this measure. It is concluded that 40mg propranolol had little effect on psychic anxiety in this model. 41 references. (Author abstract modified)

000792 Rickels, K.; Case, W. G.; Chung, H.; Downing, R. W.; Vlahovich, J. Psychopharmacology Research Unit, Dept. of Psychiatry, University of Pennsylvania, Philadelphia, PA 19104 **Diazepam and halazepam in anxiety: some prognostic indicators.** International Pharmacopsychiatry (Basel). 13(2):118-125, 1978.

A multiple-step search-regression procedure was applied to data obtained with 37 diazepam and 42 halazepam-treated anxious outpatients. Good treatment outcome was predicted for those patients who reported a more adequate family adjustment, the presence of precipitating stress, and who either had no prior psychotropic drug treatment, or if they had received such treatment, had experienced a good response. It was found that patients high in initial anxiety but low in initial interpersonal problems improved the most with both medications. Differential drug effects indicated halazepam did particularly poorly in less anxious patients and in those patients given a good prognosis by the doctor. Diazepam response was much less affected by these variables. The excessive sedating effect of the daily halazepam dosage (160mg/d) used may explain these differential drug effects. In the dosages employed (diazepam 20mg/d and halazepam 160mg/d), diazepam produced the more consistent antianxiety effects. The indication that halazepam 160mg/d was more effective than diazepam 20mg/d in the initially sicker patients, while of interest, is probably simply a dose-related phenomenon, indicating that diazepam 20mg/d was too low a daily dosage for severely anxious patients. 7 references. (Author abstract modified)

000793 Schless, Arthur; Weise, Charles C.; Sandler, Kenneth; Rickels, Karl. Psychopharmacology Research and Treatment Unit, Dept. of Psychiatry, University of Pennsylvania, Philadelphia, PA 19104 **Chlorpromazine and placebo in anxious neurotic outpatients: a controlled study.** Progress in Neuro-Psychopharmacology. 2(2):191-196, 1978.

The effects of chlorpromazine on 65 anxious neurotic outpatients were evaluated in a 4-week, double-blind, controlled study. Chlorpromazine produced statistically significant improvement over placebo at treatment endpoint in somatic but not emotional manifestations of anxiety. The use of chlorpromazine in the treatment of severe anxiety appears to be indicated for anxious neurotic outpatients who have been found to be resistant to treatment with benzodiazepines. 5 references. (Author abstract modified)

000794 Stein, Marsha K.; Downing, Robert W.; Rickels, Karl. Rickels: 203 Piersol Building, Hospital of the University of Pennsylvania, 3400 Spruce St., Philadelphia, PA 19104 **Self-esti-**

mates in anxious and depressed outpatients treated with pharmacotherapy. Psychological Reports. 43(2):487-492, 1978.

Self-estimates, assessed by Osgood's semantic differential technique, were obtained for 96 anxious and 79 depressed patients both before and after 4 weeks of treatment with pharmacotherapy. While there were few changes in self-estimates over the course of treatment with either drug or placebo, patients rated as improved had significantly higher pretreatment potency scores than those rated unimproved. This finding was more pronounced for depressed than for anxious patients and was not affected significantly by either sex or social class. 13 references. (Author abstract)

000795 Zisook, Sidney; Rogers, Peggy J.; Faschingbauer, Thomas R.; Devaul, R. A. University of Texas Medical School, P. O. Box 20708, Houston, TX 77025 **Absence of hostility in outpatients after administration of halazepam - a new benzodiazepine.** Journal of Clinical Psychiatry. 39(8):683-686, 1978.

The changes in hostility levels in a group of 51 anxious adult outpatients who were impaneled in a double-blind, 6-week evaluation of halazepam were studied. A number of benzodiazepines have been shown to increase hostility and aggression. The patients were randomly assigned either halazepam or placebo. Hostility was measured by changes in response on four different scales, the anger/hostility factor of the patient symptom checklist and three MMPI hostility scales. It was found that halazepam does not induce significant changes in hostility. 15 references. (Author abstract modified)

11 DRUG TRIALS IN MISCELLANEOUS DIAGNOSTIC GROUPS

000796 Abbassi, V.; Linscheid, T.; Coleman, M. Georgetown University Medical Center, Dept. of Pediatrics, 3800 Reservoir Road, N.W., Washington, DC 20007 **Triiodothyronine (T3) concentration and therapy in autistic children.** Journal of Autism and Childhood Schizophrenia. 8(4):383-387, 1978.

The clinical and biochemical status of the thyroid function, including measurement of triiodothyronine (T3), of a group of 13 autistic patients between the ages of 7 and 21 years was investigated. There was no clinical evidence for hypothyroidism in any patient, and T3, thyroxine, and thyrotropin concentrations were within the normal range. Two patients who had retarded bone ages were treated with T3 for 6 months. Hyperthyroidism developed when T3 levels exceeded physiologic concentrations in these patients. The concept that the clinical response to T3 in autistic patients results from correction of thyroid dysfunction is not supported by these findings. 9 references. (Author abstract modified)

000797 Bielmann, P.; Levac, T.; Gagnon, M. A. National Institute of Scientific Research, Louis-H. Lafontaine Hospital, Montreal, Quebec H1N 3M5, Canada **Clonazepam: its efficacy in association with phenytoin and phenobarbital in mental patients with generalized major motor seizures.** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 16(6):268-273, 1978.

In a 36-week controlled study, the efficacy of clonazepam administered with phenytoin and phenobarbital was evaluated in 24 epileptic mental patients suffering from major motor seizures. The patients were distributed in two strata according to the presence or the absence of chlorpromazine. As compared with placebo treatment in the chlorpromazine-free patients, a significant reduction in the frequency of the tonic clonic seizures was observed during the 24-week clonazepam treatment. This effect could not be observed in the patients requiring the antipsychotic drug. The most common adverse reactions to clonazepam were drowsiness and ataxia and these diminished with continued treatment. 33 references. (Author abstract)

000798 Branchey, Marc H.; Lee, J. Hillary; Simpson, George M.; Elgart, Beltran; Vicencio, Alfin. Dept. of Psychiatry, Rockland Research Institute, Orangeburg, NY 10962 **Loxapine succinate as a neuroleptic agent: evaluation in two populations of elderly psychiatric patients.** Journal of the American Geriatrics Society. 26(6):263-267, 1978.

Loxapine succinate, a newly-developed neuroleptic drug, was administered to two groups of geropsychiatric patients: 1) 12 patients with psychosis and organic brain syndrome, and 2) 14 with chronic schizophrenia. After a 2-week baseline period, loxapine was given for 12 weeks. The moderate therapeutic effect of loxapine in the responders was similar to that of other neuroleptic drugs. The therapeutic dosage range was found to be from 10mg/day to 80mg/day--about half that used for younger patients. The chief side-effects were drowsiness, mild extrapyramidal symptoms, and a slight increase in blood pressure. 7 references. (Author abstract)

000799 Caine, Eric; Kartzinel, Ronald; Ebert, Michael; Carter, Anne C. Section on Experimental Therapeutics, Laboratory of Clinical Science, NIMH, Bethesda, MD 20014 **Neuroendocrine function in Huntington's disease: dopaminergic regulation of prolactin release.** Life Sciences (Oxford). 22(10):911-918, 1978.

Plasma prolactin (PRL) levels were measured in seven patients with Huntington's disease (HD) and in eight age-matched controls after the randomized, oral administration of placebo, 100mg chlorpromazine, 1mg bromocriptine, or 50mg carbidopa followed by 200mg levodopa. HD patients showed significantly higher PRL levels 60 and 120 minutes, but not 180, 240, or 360 minutes after administration of placebo. Controls showed a significant suppression of PRL release at 180 and 240 minutes after administration of levodopa and at 180, 240, and 360 minutes after bromocriptine. HD patients showed no change after the levodopa/carbidopa combination or bromocriptine. Both groups showed a sustained elevation of PRL levels after chlorpromazine, but the maximum PRL levels of HD patients were significantly less than those of controls. Results suggest that HD patients may have a diminished number of hypothalamic/pituitary dopamine receptors for the regulation of PRL secretion. 24 references. (Author abstract modified)

000800 Campbell, Magda; Anderson, Lowell T.; Meir, Mila; Cohen, Ira L.; Small, Arthur M.; Samit, Carol; Sachar, Edward J. Dept. of Psychiatry, New York University Medical Center, 550 First Avenue, New York, NY 10016 **A comparison of haloperidol and behavior therapy and their interaction in autistic children.** Journal of the American Academy of Child Psychiatry. 17(4):640-655, 1978.

Haloperidol and behavior therapy, and the interaction of the two treatments with respect to the effect on symptoms and language acquisition in 40 autistic children aged 2.6to 7.2years was assessed. Children were randomly assigned to four treatment groups in a factorial design. The study was placebo-controlled and double-blind, using multiple independent raters who assessed treatment effects under three types of rating conditions. Haloperidol was found to be significantly superior to placebo in decreasing certain symptoms, depending on the age group. Results show that the combination of the two treatments was most effective in facilitating the acquisition of imitative speech. 24 references. (Author abstract modified)

000801 Campbell, Magda; Cohen, Ira L. Department of Psychiatry, New York University, New York, NY 10003 **Drug therapy for childhood psychoses.** Resident and Staff Physician. 24(5):115-118, 1978.

The efficacy of neuroleptics for psychotic children is discussed. Though neuroleptics are widely used for children and adolescents designated as autistic and schizophrenic, the effects of these drugs on this group has not been systematically investigated. Poor methodology, a lack of definite criteria for diagnosis, and a too general classification of psychoses are consequences of the lack of understanding. The four classes of neuroleptics are briefly described. It is suggested that before instituting drug therapy, the relation of the patient and his symptoms to his family should be assessed. The purpose of the drugs is to render the patient more amenable to other therapies which comprise the total treatment. Failure of drug responses can be due to noncompliance, wrong dosage, polypharmacy, or a variety of other factors. Possible hazards of chemotherapy must be weighed against the hazards of untreated psychosis, or the ineffectiveness of lengthy, costly, and often unavailable therapies. 19 references.

000802 Campbell, Magda; Small, Arthur M.; Hollander, Charles S.; Korein, Julius; Cohen, Ira L.; Kalmijn, Mieke; Ferris, Steven. New York University Medical Center, 550 First Avenue, New York, NY 10016 **A controlled crossover study of triiodothyronine in autistic children.** Journal of Autism and Childhood Schizophrenia. 8(4):371-381, 1978.

A placebo-controlled crossover study of the behavioral effects of triiodothyronine (T3) was conducted in 30 young clinically euthyroid autistic children. Multiple independent raters and multiple rating scales were used. Except for a few symptoms that were reduced on T3, the drug did not differ from placebo. Time itself accounted for most of the improvement in the whole sample. As a group, the lower IQ children responded to T3. The individual children who were responders could not be defined by any parameter. 23 references. (Author abstract)

000803 Catlin, Don H.; Hui, Ka Kit; Loh, Horace H.; Li, Choh Hao. Department of Pharmacology, University of California, Los Angeles, CA 90024 **Beta-endorphin: subjective and objective effects during acute narcotic abstinence in man.** Advances in Biochemical Psychopharmacology. 18:341-350, 1978.

The effect of intravenous infusion of 30mg beta-endorphin on the narcotic abstinence syndrome in a patient undergoing abrupt withdrawal from methadone is described. Respiratory rate, abstinence intensity score, self-reports, and observer reports were monitored during the 8-day study. A decrease in respiratory rate proved to be the most sensitive objective indicator of a possible effect of beta-endorphin. Pupillary constriction was not observed and euphoria was not reported. The patient and observer reports indicate that saline and beta-endorphin both produced a clear reduction in abstinence signs. The observer reported that the saline and beta-endorphin effects were similar in magnitude, but the duration of the beta-endorphin response was much longer than that of the saline placebo effect. 16 references.

000804 Chien, Ching-piao; Jung, Koock; Ross-Townsend, Anita. Department of Psychiatry, Albany Medical College, Albany, NY 12208 **Efficacies of agents related to GABA, dopamine, and acetylcholine in the treatment of tardive dyskinesia.** Psychopharmacology Bulletin. 14(2):20-22, 1978.

Efficacies of agents related to gamma-aminobutyric (GABA), dopamine and acetylcholine in the treatment of tardive dyskinesia were tested. All study patients (n=20) manifested persistent dyskinesia while on neuroleptics. The subjects were randomly assigned to either sodium valproate, oxypertine or deanol and treated for three weeks on active drug. This was either followed or preceded by 3 weeks on placebo. Results indicate that oxypertine ranks first, sodium valproate second, and deanol last in their therapeutic efficacy on tardive dyskinesia. This suggests that direct manipulation of dopamine results in more significant change in tardive dyskinesia than manipulating GABAergic and cholinergic neurotransmitters. 4 references.

000805 Dalby, J. Thomas; Kapelus, Gary J.; Swanson, James M.; Kinsbourne, Marcel; Roberts, Wendy. Department of Psychology, University of Calgary, Calgary, Alberta T2N 1N4, Canada **An examination of the double-blind design in drug research with hyperactive children.** Progress in Neuro-Psychopharmacology. 2(1):123-127, 1978.

The use of the double-blind design in studies of psychostimulants in hyperactive children was evaluated. A total of 177 hyperactive children were interviewed immediately after serving as research subjects in both drug and placebo conditions on a single day. Each child was asked to guess when he had received the active drug (morning or afternoon). Three experimenters who observed the children during the day were also asked to indicate when the child had received the drug. Results indicate that the experimenters were able to identify the children's drug states at better than chance levels, but the children themselves were not. It is concluded that concern over drug dependence may be unwarranted, since the children were not able to identify their own drug states. It is also concluded that experimenter observations are valuable sources of information when combined with more objective measures, even though the observers are not functionally blind to the child's drug state. 11 references. (Author abstract modified)

000806 Domino, E. F. no address **Workshop 6: models in geriatric neuro-psychopharmacology.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1611-1687).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, Workshop 6 was concerned with models in geriatric neuropsychopharmacology. Animal models of the aging brain were discussed with reference to central hypoxia, brain cholinergic deficits, changes in central catecholaminergic neurons, neuronal lipfuscin and learning deficits, and deficits in thermoregulation in senescent animals. Disturbed vigilance regulation and tricyclic drug treatment in elderly patients were also discussed. Two geriatric behavioral rating scales were evaluated.

000807 Fabre, Louis F., Jr.; Brachfeld, Jonas; Meyer, Lee Roy; Slowe, I. Arnold; Calvo, Robert; Metzler, Carl. Fabre Clinic, 5503 Crawford St., Houston, TX 77004 **Multi-clinic double-blind comparison of triazolam (Halcion) and placebo administered for 14 consecutive nights in outpatients with insomnia.** Journal of Clinical Psychiatry. 39(8):679-682, 1978.

The effects of triazolam compared with placebo in treating insomnia in patients requiring a hypnotic were examined. In a multiclinic double-blind study, 239 patients suffering from insomnia were treated with triazolam 0.5mg or placebo for 14 nights. It was reported that triazolam was significantly better than placebo on all efficacy parameters measured, including how much medication helped the patients to sleep, onset of sleep, duration of sleep, duration compared to usual number of nocturnal awakenings, and feelings of restfulness in the morning. It was also reported that triazolam did not produce evidence of tolerance development after 2 weeks of treatment. It is concluded that triazolam was significantly better than placebo for the treatment of insomnia. 15 references. (Author abstract modified)

000808 Friedman, Stanley; Kantor, Irwin; Sobel, Stuart; Miller, Robert. Department of Psychiatry, Mount Sinai School of Medicine, CUNY, Ann. 22-44, 11 East 100th Street, New York, NY 10029 **A follow-up study on the chemotherapy of neuroderma-**

titis with a monoamine oxidase inhibitor. Journal of Nervous and Mental Disease. 166(5):349-357, 1978.

A followup study on the chemotherapy of neurodermatitis with the monoamine oxidase inhibitor phenelzine sulfate (75mg/day) is reported. Seven of the eight subjects who continued phenelzine therapy after a 5-week experimental course showed further improvement, four to the point of complete remission. Some patients seemed to need a minimal remnant of the disease, possibly because of its unconscious meanings elaborated over the years. Termination of phenelzine therapy was related to recurrence of neurodermatitis in varying ways, but the disease did not return in its original severity in any patient. Average severity of recurrence was about 25% of the original pathology. Adverse reactions included impaired mental alertness, hyperreflexia, tremor, weight gain, sexual dysfunction, and hypotension in two teenage subjects. 9 references. (Author Abstract modified)

000809 Galuszko, Pawel; Januszkiewicz-Grabiasowa, Aloiza. Klinika Chorob Psychicznych AM, ul. Debinki 7, bud. 25, 80-211 Gdansk, Poland **/The effectiveness of atropine coma therapy in the treatment of mental disorders./** Przydatnosc spiaczek atropinowych w leczeniu zaburzen psychicznych. Psychiatria Polska (Gdansk). 12(2):167-172, 1978.

The effectiveness of atropine coma therapy in the treatment of mental disorders including schizophrenia, obsessive-compulsive syndrome, other neuroses, psychoses, and encephalopathy was studied. Atropine coma therapy was used from 1961 to 1971 with more than 500 men, women, and children (age range 4 to 70 years). The greatest effects were obtained in patients with the obsessive-compulsive syndrome. Patients with simple residual or childhood schizophrenia improved in 31% of the cases, and patients with acute psychotic syndromes of chronic schizophrenia improved in 57% of the cases. The need for using large doses of atropine sulphate at the beginning of treatment to avoid motor agitation associated with anxiety and fear or psychotic complications in the form of hallucinations is emphasized. 25 references. (Journal abstract modified)

000810 Goldstein, M.; Lieberman, A.; Battista, A. F.; Lew, J. Y.; Hata, F. Room H549, Department of Psychiatry, New York University Medical Center, 550 First Ave., New York, NY 10016 **Bromocriptine, lergotrile: the antiparkinsonian efficacy and the interaction with monoaminergic receptors.** Pharmacology (Basel). 16(Suppl. 1):143-149, 1978.

The antiparkinsonian activity of bromocriptine and of lergotrile was investigated in monkeys with surgically-induced tremors and in parkinsonian patients. Both drugs effectively relieved tremors in experimental monkeys and induced less pronounced abnormal involuntary movements with L-dopa or piribedil. Both drugs were shown to be of therapeutic value in a group of patients with advanced Parkinson's disease who were no longer responsive to levodopa combined with carbidopa. Adverse effects were similar to those observed with levodopa and carbidopa, except that in individual patients abnormal involuntary movements and diurnal oscillations in performance were decreased while mental changes were increased. The interaction of bromocriptine and of lergotrile with dopamine and alpha-adrenergic receptors were investigated. Both drugs had mixed agonist/antagonist activities with respect to the dopamine receptors. Both drugs effectively displaced the binding of the alpha-adrenergic antagonist WB-4101 to cerebral cortex membranes. The mechanisms underlying the antiparkinsonian efficacies of these two drugs are discussed. 19 references. (Author abstract)

000811 Ishibashi, Miyuki; Yamaji, Tohru; Kosaka, Kinori. Third Department of Internal Medicine, Faculty of Medicine, University of Tokyo, Hongo, Tokyo, Japan **Induction of growth hormone and prolactin secretion by luteinizing hormone-releasing hormone and its blockade by bromoergocriptine in acromegalic patients.** Journal of Clinical Endocrinology and Metabolism. 47(2):418-421, 1978.

The present study was undertaken: 1) to assess the relationship of growth hormone (GH) and prolactin (PRL) secretion by luteinizing hormone (LRH) administration, and 2) to examine the effect of 2-bromo-alpha-ergocriptine (CB154) on LRH-induced GLT and PRL release in patients with acromegaly. Intravenous dosages of 100mcg LRH were administered to 22 patients with active acromegaly. A definite increase in serum GH and PRL levels was observed in one patient while four others responded by secretion of GH or PRL. The effectiveness of LRH on GH and PRL release was not correlated with the age or sex of patients, the basal serum levels of GH or PRL, or the increase in serum gonadotropin concentrations after LRH injection. In three patients, this LRH-induced GH and PRL release was completely blocked by pretreatment with CB154. The results suggest that elevations of GH and PRL after LRH occur rather sporadically in acromegalic patients and that the action of LRH on GH release is occasioned by a different mechanism from that of TRH. 9 references. (Author abstract modified)

000812 Kinsbourne, Marcel. University of Toronto Medical School, Toronto, Ontario, Canada **Hyperactivity: treatment.** Exceptional Parent. 8(5):7-11, 1978.

The effects, risks, and limits of stimulant therapy in the treatment of hyperactivity are examined. Stimulants can aid the hyperactive child in controlling his impulsiveness. To determine the utility of stimulant therapy for a particular hyperactive child, a trial is recommended. Unless there is clear cut improvement in the child's behavior, stimulants should not be used; however, if used, they should be used consistently and thoroughly. Effectively used, medication can improve social and academic functioning. Overdosage may result in excessive reflectiveness: the child may become anxious, whiny, and withdrawn. Side-effects which have been associated with stimulant therapy may include drowsiness/sleep disturbance and appetite suppression. There appears to be little or no possibility of addiction in hyperactive children treated with stimulants. The importance of structure and limit setting for the hyperactive child are emphasized.

000813 Lake, C. Raymond; Ziegler, Michael G.; Coleman, Michael D.; Kopin, Irwin J. Laboratory of Clinical Science, NIMH, 9000 Rockville Pike, Bethesda, MD 20014 **Potentiation by fenfluramine of the antihypertensive effect of hydrochlorothiazide. (Unpublished paper)** Bethesda, MD, NIMH, 1978. 20 p.

Potentiation of the antihypertensive effect of hydrochlorothiazide by fenfluramine, a trifluoromethyl N-ethyl substituted analogue of amphetamine which suppresses appetite without CNS stimulation or marked hypertensive effects in rats, was demonstrated in human Ss. Hydrochlorothiazide lowered blood pressures (BPs) but concomitantly elevated norepinephrine (NE) plasma levels in 43 hypertensive patients after 2 and 7 weeks of treatment. Nine obese hypertensive patients in whom BP was not lowered by hydrochlorothiazide showed similar effects. These nine Ss then received fenfluramine in addition to thiazide and were reevaluated after 2 and 5 weeks. There were further weight losses and decreases in BPs at these test periods. NE plasma levels, which were elevated by hydrochlorothiazide, were decreased to pretreatment levels after the addition of fenfluramine. Fenfluramine thus appears to be a useful drug in obese thiazide-resistant hypertensive patients when used in combination with a thiazide diuretic. (Author abstract modified)

000814 Lees, Andrew J.; Haddad, Selim; Shaw, Kenneth M; Kohout, Ladislav J.; Stern, Gerald M. Dept. of Neurology, University College Hospital, 25 Grafton Way, London, WC1E 6AU, England **Bromocriptine in parkinsonism.** Archives of Neurology. 35(8):503-505, 1978.

A study designed to clarify the long-term value of bromocriptine in the management of Parkinson's disease is described. Bromocriptine was given in a controlled trial to 86 parkinsonian patients. Eight of 30 previously untreated patients with early and mild disease showed sustained benefit for 2 years and did not develop on/off effects of dyskinesias. Only 2 of 23 patients unable to tolerate or failing to respond to levodopa benefitted from bromocriptine. Thirty-three patients with residual disabilities despite maximum tolerated doses of levodopa were also given bromocriptine. Although benefit accrued, treatment was abandoned because of unacceptable side-effects, and there was no improvement in the 11 with severe on/off disabilities. Although it was found that benefit from 70mg daily of bromocriptine was comparable to that from 750mg of levodopa with carbidopa, bromocriptine seems to offer no advantage to the majority of patients who have received or are receiving levodopa and/or carbidopa. 15 references. (Author abstract modified)

000815 MacLeod, S. M.; Sellers, E. M.; Giles, H. G.; Billings, B. J.; Martin, P. R.; Greenblatt, D. J.; Marshman, J. A. Addiction Research Foundation, 33 Russell Street, Toronto, Ontario M5S 2S1, Canada **Interaction of disulfiram with benzodiazepines.** Clinical Pharmacology and Therapeutics. 24(5):583-589, 1978.

The disposition of chlordiazepoxide (50mg, intravenously), diazepam (0.143mg/kg, orally), and oxazepam (0.429mg/kg, orally) were studied in normal and alcoholic men before and after chronic disulfiram administration. Disulfiram significantly decreased the plasma clearance of chlordiazepoxide (54%), diazepam (41%), and their active N-desmethyl metabolites, but had minimal effects on oxazepam disposition. Results suggest that oxazepam may be the drug of choice when benzodiazepine therapy is used in patients taking disulfiram. 32 references. (Author abstract modified)

000816 Malizia, E.; Andreucci, G.; Cerbo, R.; Colombo, G. Toxicological Clinic, Anesthesiology and Resuscitation Institute, University of Rome, Rome, Italy **Effect of naloxone on the acupuncture-elicited analgesia in addicts.** Advances in Biochemical Psychopharmacology. 18:361-362, 1978.

The effects of naloxone on acupuncture analgesia were investigated in heavy tobacco and cannabis smokers and in alcoholics. Patients treated with intravenous naloxone did not show the repulsion against the habituating drug normally induced by acupuncture. The effect of naloxone was more intense in tobacco smokers and alcoholics than in cannabis smokers. Results indicate that naloxone inhibits the drug repulsion produced by acupuncture and suggest that this repulsion is normally mediated by the release of endorphins or other opioid peptides. 9 references.

000817 Mayfield, Demmie G.; Johnston, Robert G. M. Providence VA Hospital, Providence, RI 02908 **Pharmacology treatment in drug abuse** Rhode Island Medical Journal. 61(2):69-77, 1978.

The pharmacological aspects involved in the treatment of drug and alcohol abuse are reviewed. In cases of acute alcohol intoxication haldoperidol is recommended when the patient displays destructive behavior; chlorpromazine is recommended for easing alcohol withdrawal; and tetraethylthiuram-disulfide is recommended for long-term treatment. The drugs described as CNS depressants are listed. Phenobarbital is recommended as a CNS depressant during withdrawal. The treatment of overdose with depressants is not primarily a pharmacological matter. Pharmacological measures are most effective in promoting detoxification. To avoid withdrawal syndromes the dosage of a drug producing the dependence must be slowly reduced. In cases of narcotic overdose from morphine, the synthetic derivatives of morphine, and the synthetic opiates with morphine-like action are used. Two methods of opiate maintenance often with methadone and opiate antagonists are recommended for long-term rehabilitative treatment of addicts. 13 references.

000818 McConnachie, R. W. Department of Geriatric Medicine, Chesterfield Royal Hospital, Chesterfield, Derbyshire S41 7SP, England **The clinical assessment of brain failure in the elderly.** Pharmacology (Basel). 16(Suppl. 1):27-35, 1978.

A methodology for determining clinical assessment of brain failure in the elderly is described. The most useful and practical tests to satisfy the criteria are: 1) the abbreviated mental test score; 2) the mental deterioration score of Gottfies and Gottfies (1975) or Blessed et al. (1968); 3) the Questel picture matching task; 4) the Sandoz Clinical Assessment Geriatric Scale; and 5) quantified EEG. Using these methods of assessment, 25 double-blind controlled clinical trials, in which the efficacy and safety of dihydroergotoxine (Hydergine) examined in 1,300 mild to moderately deteriorated geriatric patients, indicated that Hydergine was an effective therapeutic agent. The drug helped the subjects to think better, behave better, be more emotionally stable, and cope with their daily living tasks. 16 references.

000819 McNeil, George; Elkins, Alan; Goldings, Herbert. Dept. of Psychiatry, Maine Medical Center, Portland, ME 04102 **Juvenile manic-depressive illness successfully treated with lithium carbonate.** Journal of the Maine Medical Association. 69(4):120-121, 1978.

The case of a 15-year-old girl with manic-depressive illness of at least 2 years' duration who has been successfully treated with lithium carbonate is reported and reviewed. It is noted that, although recognition of manic-depressive illness in the pediatric age group remains uncommon, patients previously seen as schizophrenic treatment failures may now be reviewed, in the light of atypical manic-depressive illness, for a trial on lithium carbonate. The similarities and diagnostic confusion concerning childhood depression, psychosomatic illness, mania, schizophrenia, and hyperactivity are discussed. 14 references.

000820 no author. no address **Drug combination combats dyskinesia.** Medical World News. 19(21):16, 1978.

A study which reports that the uncontrolled movements of tardive dyskinesia and akathisia can be successfully treated with a combination of reserpine and alpha-methyltyrosine (AMT) is presented. In preliminary trials, reserpine and AMT either alone or in combination were found to eliminate movement disorders in patients on long-time phenothiazine or butyrophenone therapy. There was also some indication that these two drugs may help control the psychosis as well. A major dose-limiting problem has been the possibility of reserpine and AMT in combination producing Parkinsonism. It is suggested that further research is needed.

000821 Papavasiliou, Paul S.; Cotzias, George C.; McDowell, Fletcher H.; Rosal, Victoria L. F.; Sheehan, Paul J. Department of Neurology, Cornell University Medical College, 1300 York Ave., New York, NY 10021 **Cyproheptadine in levodopa-induced dyskinesia in parkinsonism.** Clinical Pharmacology and Therapeutics. 23(2):195-198, 1978.

The neuroendocrine properties and beneficial effects of cyproheptadine in the treatment of levodopa-induced dyskinesia were investigated. Six patients were administered doses of up to 42mg/day with no significant benefit of dyskinesia or symptom

control. Improvement in appetite was noted by three patients. This suggests that different mechanisms may be responsible for the pathogenesis of phenothiazine and amine-induced dyskinesia. The failure to control levodopa-induced dyskinesia selectively with serotonin agonists and antagonists and the accentuation of the dyskinesia in the presence of anticholinergic agents further suggests that substances that increase directly central cholinergic activity may be effective in the control of levodopa-induced dyskinesia. 20 references. (Author abstract modified)

000822 Perry, Paul J.; Wilding, David C.; Fowler, Richard C.; Hepler, Charles D.; Caputo, James F. College of Pharmacy, University of Iowa, Iowa City, IA 52242 **Absorption of oral and intramuscular chlordiazepoxide by alcoholics.** Clinical Pharmacology and Therapeutics. 23(5):535-541, 1978.

The effect of chronic alcoholism on plasma levels of chlordiazepoxide (CDX) after oral or intramuscular administration was studied. A 50mg oral dose of CDX resulted in significantly higher plasma levels in the 2 hours following drug administration than a 50mg intramuscular dose in acute withdrawing alcoholics; the same effects were observed when CDX was administered again 7 days later. Peak concentration occurred significantly sooner after oral CDX than intramuscular CDX. The active metabolite N-desmethylchlordiazepoxide peaked significantly earlier with the oral dose than with the intramuscular dose after the patient was alcohol free for a week. Results suggest that the oral route of administration is preferable to the intramuscular route in the treatment of alcohol withdrawal. 14 references. (Author abstract modified)

000823 Price, Trevor R. P.; Levin, Robert. Darmouth Medical School, Hanover, NH 03755 **The effects of electroconvulsive therapy on tardive dyskinesia.** American Journal of Psychiatry. 135(8):991-993, 1978.

The effects of electroconvulsive therapy (ECT) on tardive dyskinesia are discussed in terms of a case study of a 49-year-old woman. ECT has been reported to be efficacious in the relief of extrapyramidal symptoms and depressive features of patients suffering from Parkinson's disease. Previous findings linking the use of ECT with onset of tardive dyskinesia are noted. In the case described, a course of bilateral frontotemporal ECT modified with pentothal and succinylcholine was effective in diminishing buccallingual dyskinesia. Whether ECT was causally related to the amelioration of symptoms is discussed. It is argued that the improvement was not spontaneous because of its abruptness and because of the stability of the condition prior to treatment. Questions are raised regarding the effects of ECT on involuntary movement disorders and on striatal dopaminergic/cholinergic neurochemical balance. 10 references.

000824 Ruthven, Courtney Lewis. Oklahoma State University **The effects of methylphenidate (Ritalin) on the neuropsychological status of learning disabled-minimal brain dysfunction children. (Ph.D. dissertation).** Dissertation Abstracts International. 539(1):396-B, 1978. Ann Arbor, Univ. Microfilms No. 7811068, 175 p., 1977.

In a study of the effects of methylphenidate (Ritalin) on the neuropsychological functioning of learning disabled/minimal brain dysfunction children (LD/MBD), the performances of 15 Ritalin-treated LD/MBD children and of 15 untreated LD/MBD children on the Halstead-Reitan Neuropsychological test battery were compared. The theory that LD/MBD children experience a neuropsychological deficit was supported; the LD/MBD children were more impaired in neuropsychological functioning than normal children. The theory that LD/MBD is due to attentional deficits associated with reticular activating system inadequacies was not supported. The clinical observation that Ritalin impoves neuropsychological functioning in LD/MBD children was supported by the neuropsychological test results. (Journal abstract modified)

000825 Shea, Victoria Tucker. University of North Carolina at Chapel Hill **State-dependent learning in children receiving methylphenidate. (Ph.D. dissertation).** Dissertation Abstracts International. 39(1):399-B, 1978. Ann Arbor, Univ. Microfilms No. 7810505, 59 p., 1977.

In a study of state-dependent learning in children receiving methylphenidate (Ritalin), 15 children who received methylphenidate learned 16 paired-associate picture combinations following administration of methylphenidate and placebo. During retention testing, all combinations of learning drug state and testing drug state were observed for each child. Results indicated a nonsignificant trend in the direction of state dependence in the whole sample, and significant symmetrical state-dependent effects were obtained in those Ss whose original learning was facilitated by methylphenidate. (Journal abstract modified)

000826 Shoichet, Roy P. University of Toronto, Toronto, Ontario, Canada **Sodium amytal in the diagnosis of chronic pain.** Canadian Psychiatric Association Journal (Ottawa). 23(4):219-228, 1978.

To help with the diagnosis of chronic pain problems, the use of sodium amytal, given intravenously over a 45-minute period in 75 consecutive outpatient consultations, is described. Many of the patients were foreign-born and had significant language difficulties. Patients were examined physically and psychologically, and responses during light, midrange, and deeper levels of sodium amytal sedation were analyzed. With this technique, most patients can be assigned to one of the following diagnostic categories: psychogenic regional pain, organic pain, mixed group (organic plus psychogenic regional pain), and malingering. It is suggested that sodium amytal helps to overcome language barriers, reduces the time required for proper assessment, and allows the patient and the examiner to appreciate more precisely the level of pain and the limits of physical performance, as well as permitting an effective exploration of psychodynamic issues. 12 references. (Author abstract)

000827 Silvestrini, F.; Liuzzi, A.; Chiodini, P. G. Center of Endocrinology, Ospedale Maggiore, Milan, Italy **Effect of ergot alkaloids on growth hormone and prolactin secretion in humans.** Pharmacology (Basel). 16(Suppl. 1):78-87, 1978.

The effects of ergot alkaloids, mainly bromocriptine, on the secretion of growth hormone (GH) and PRL in normal subjects and in pathological conditions (i.e.,acromegaly and hyperprolactinemic states) are discussed. In the normal subjects, bromocriptine released GH, whereas in about 50% of acromegalics it caused a marked and long-lasting inhibition of the hormone secretion. PRL release was reduced by the drug both in normal subjects and in hyperprolactinemic states. Data indicate that bromocriptine inhibited GH release in acromegaly and PRL secretion through a dopaminergic mechanism of action playing at the pituitary level. Data are reported on the effectiveness of bromocriptine in the treatment of acromegaly and hyperprolactinemic states. 22 references. (Author abstract)

000828 Sleator, Esther K.; Sprague, Robert L. Institute for Child Behavior and Development, University of Illinois, Champaign IL **Pediatric psychopharmacology.** In: Clark, W., Principles of psychopharmacology. 2nd ed. New York, Academic Press, 1978. 976 p. (573-591).

The use of psychotropic drugs for the behavior disorders of children are examined. Topics discussed are: diagnosis of hyperactivity (minimal brain dysfunction); stimulant drug treatment in

hyperactivity; side-effects of stimulant drugs; long-term aspects of stimulant drug therapy; severely disturbed children; mental retardation; separation anxiety; enuresis; depression; and the role of the Federal government. 35 references.

000829 Summers, William K. Department of Psychiatry, University of Pittsgurg, Pittsburgh, PA 15261 **A clinical method of estimating risk of drug-induced delirium.** Life Sciences. 22(17):1511-1516, 1978.

A clinical research method of estimating risk of drug-induced acute organic mental syndromes or delirium was employed with two patient populations where delirium is expected to occur and with one population where mild organic mental syndromes occur. Sixty-four psychoactive agents were used on 84 subjects, and exposure to psychoactive drugs was calculated numerically as the drug-risk number. In two populations, postcardiotomy and postcataractectomy states, the drug-risk number separated delirium from nondelirium subjects. Subjects with mild acute organic mental syndrome after electroconvulsive therapy also had a higher average drug-risk number than comparison subjects. 24 references. (Author abstract modified)

000830 Wouters, J. Passtraat, B-2440 Geel, Belgium **A six-month follow-up of refractory chronic psychotics treated with Haldol-AID.** Acta Psychiatrica Belgica (Bruxelles). 78(Part 2):399-406, 1978.

The extent and speed of adjustment to reduced dosages of Haldol and of switching to long-acting neuroleptics were evaluated with refractory chronic psychotics (13 to 55 years old). Nine patients were switched to a lower dosage of mostly a long-acting diphenylbutylpiperidine after having been treated with high initial and maintenance doses of Haldol. This switch-over was rated as very good in three patients and good in two patients on fluspirilene (Imap); it was also rated as good in one patient in fluphenazine decanoate and one on pipamperone. One patient could discontinue neuroleptic treatment, and one patient was rated as a failure. It is concluded that a switch-over to a parenteral diphenylbutylpiperidine is beneficial, and that further improvement is feasible after a period of Haldol medication. The advantges of a maintenance therapy with Imap appear to be its lack of inconveniences for the patint (not sedative, only slightly hypokinetic) and its good antipsychotic and adequately prolonged activity (1 to 2 weeks). 10 references. (Author abstract modified)

13 MECHANISM OF ACTION: PHYSIOLOGICAL, BIOCHEMICAL AND PHARMACOLOGICAL

000831 Bell, Rodney D.; Carruth, Alan; Rosenberg, Roger N.; Boyar, Robert M. Department of Internal Medicine, University of Texas Health Science Center, 5323 Harry Hines Boulevard, Dallas, TX 75235 **Effect of dopamine agonist (lergotrile mesylate) therapy on twenty-four hour secretion of prolactin in treated Parkinson's disease.** Journal of Clinical Endocrinology and Metabolism. 47(4):807-811, 1978.

Plasma prolactin (PRL) and growth hormone (GH) levels were measured in six patients with Parkinson's disease under various treatment protocols. Two untreated patients with Parkinson's disease had normal 24-hour mean PRL levels with the normal increase during sleep. During chronic treatment with L-dopa-carbidopa, the 24-hour PRL level was 12.8ng/ml, and there was a persistence of augmented PRL secretion during sleep. The 24-hour mean GH level ranged from 1.5-4.4ng/ml, with a mean of 2.5ng/ml. The addition of the dopamine agonist, lergotrile mesylate, resulted in significant suppression of the 24-hour mean PRL levels and abolition of the normal sleep augmentation after 2 weeks of therapy. This suppression was maintained in one patient who was reexamined 4 months after the addition of lergotrile therapy to L-dopa-carbidopa. The 24-hour mean GH levels did not change significantly after lergotrile, compared to L-dopa-carbidopa alone. These results suggest a dichotomy between the PRL and GH response to combined L-dopa-carbidopa and dopamine agonist therapy. The preservation of normal PRL regulation in the two untreated patients suggests that dopaminergic neurons are not universally affected in Parkinson's disease. 33 references. (Author abstract modified)

000832 Borger, J.; Van Epen, J. H.; Dekkers, A. Celebesstraat 88, The Hague, The Netherlands **A double-blind clinical evaluation of different dose intervals with fluspirilene (IMAR).** Acta Psychiatrica Belgica (Bruxelles). 78(Part 2):383-391, 1978.

The possibility of administering a biweekly dose of fluspirilene, without deterioration of the clinical picture, was investigated in a group of 34 stabilized schizophrenics (20 males, 14 females; 16 to 80 years old). After a preparatory period of 6 weeks during which patients received fluspirilene weekly, the patients were divided into two groups. During the test period of 12 weeks, one group (Group A) received the drug every 2 weeks and the other (group B) received the drug every week. The doses were adjusted individually. In group A, the active drug was replaced by a placebo injection every other week under double-blind conditions. There was no significant clinical difference between the patients receiving fluspirilene every week and those receiving it every 2 weeks. Therefore it is possible to give fluspirilene in individually adjusted doses with a dose interval of 14 days in stabilized patients. 22 references. (Author abstract modified)

000833 Campbell, Magda; Hollander, Charles S.; Ferris, Steven; Greene, Loren W. Department of Psychiatry, New York University Medical Center, 550 First Avenue, New York, NY 10016 **Response to thyrotropin-releasing hormone stimulation in young psychotic children: a pilot study.** Psychoneuroendocrinology (Oxford). 3(2):195-201, 1978.

In a study of possible hypothalamic dysfunction in young psychotic children, 400microg synthetic thyrotropin releasing hormone was given intravenously to 10 patients, ages 2.5years to 7 years 7 months. Timed venous samples were obtained for determination of the plasma triiodothyronine, thyroid stimulating hormone, and prolactin levels by radioimmunoassay. The responses were compatible with, but not diagnostic of, hypothalamic disease in most of the Ss. It is suggested that a genetic vulnerability or associated prenatal or perinatal insult to the CNS may result in a variety of abnormalities, including behavior and neuroendocrine parameters. 29 references. (Author abstract modified)

000834 Coppen, Aec; Wood, Keith. MRC Neuropsychiatry Laboratory, West Park Hospital, Epsom, Surrey, England **Tryptophan in depression.** Scottish Medical Journal (Glasgow). 23(1):75-76, 1978.

In a paper presented at the Scottish Symposium on Depression, held in Glasgow, Scotland, September 1977, the efficacy and mechanisms of tryptophan in depression are discussed. Ambiguous research results indicate that tryptophan produces an increase in 5-hydroxytryptamine (5-HT) synthesis which is neutralized by increased intracellular deamination. Indices for the prediction of brain tryptophan concentration are considered. A study of plasma tryptophan levels in depressed patients is reported in which levels were lower than those of controls but increased significantly after recovery. Results indicating a relationship between tryptophan and estrogen levels during menopause and the postpartum period are reported. The incidence of depression during these periods is reported to be high. It is con-

cluded that tryptophan should play a role in the treatment of depression. 12 references.

000835 Doluisio, James T.; Smith, Randall B.; Chun, A. H. C.; Dittert, Lewis W. College of Pharmacy, University of Texas, Austin, TX 78712 **Pentobarbital absorption from capsules and suppositories in humans.** Journal of Pharmaceutical Sciences. 67(11):1586-1592, 1978.

Serum pentobarbital levels were determined in human subjects following administration of sodium salt as a 100mg capsule orally and as two 120mg suppository formulations (A and B) rectally. From these data and previously determined kinetic constants after intravenous administration, the absorption rates and bioavailability of pentobarbital from each dosage form were determined. All three dosage forms were 100% absorbed. Peak serum pentobarbital levels occurred at 1, 4, and 10 hours for the capsule, suppository A, and suppository B, respectively. In vitro studies agreed with the serum data, in that suppository A released drug in an in vitro aqueous pH 7.4system at a much greater rate than suppository B. The capsule and suppository A both appeared to be absorbed by simple first order processes; suppository B had a complex absorption pattern, which was modeled using sequential zero order and first order absorption. 38 references. (Author abstract)

000836 Erdos, E. G.; Johnson, A. R.; Boyden, N. T. Department of Pharmacology, University of Texas Health Science Center, Dallas, TX 75235 **Inactivation of enkephalins: effect of purified peptidyl dipeptidase and cultured human endothelial cells.** Advances in Biochemical Psychopharmacology. 18:45-49, 1978.

The rapid enzymatic degradation of enkephalins was studied, using cultured human endothelial cells and a purified renal peptidase as sources of enzymes. Results indicate that the rapid inactivation of methionine-enkephalin and leucine-enkephalin may be due to at least two different enzymes present in the tissues, which are presumably localized in different structures of the cells. A peptidyl dipeptidase in the plasma membrane of various cells may degrade enkephalins by liberating a C-terminal dipeptide and an aminopeptidase in endothelial cells may cleave circulating peptides at the N-terminal end. 15 references.

000837 Findlay, John W. A.; Jones, Evelyn C.; Butz, Robert F.; Welch, Richard M. Department of Medicinal Biochemistry, Wellcome Research Laboratories, Research Triangle Park, NC 27709 **Plasma codeine and morphine concentrations after therapeutic oral doses of codeine-containing analgesics.** Clinical Pharmacology and Therapeutics. 24(1):60-68, 1978.

Plasma concentrations of codeine and morphine were determined by specific radioimmunoassays in human subjects at various times after oral administration of analgesic preparations containing therapeutic doses of codeine phosphate. Following administration of codeine phosphate (60mg) in combination with aspirin (650mg) or acetaminophen (600mg), mean peak codeine plasma concentrations and beta-phase elimination half-lives were 159ng/ml and 2.9hours for the first combination and 138ng/ml and 2.4hours for the second. Mean maximum concentrations of metabolically-produced morphine were 6.8ng/ml after the aspirin/codeine combination and 7.4ng/ml after the acetaminophen/codeine combination. Following drug administration, the mean ratio of the areas under the respective plasma concentration/time curves for morphine and codeine was 0.095 for the aspirin/codeine combination and 0.12 hour for the acetaminophen/codeine combination. Thus, free morphine represented about 10% of the free codeine area in each case. Results support the hypothesis that metabolically-produced morphine may influence or be responsible for the analgesic efficacy of codeine. 29 references. (Author abstract modified)

000838 Fuxe, Kjell; Hokfelt, Tomas. Department of Histology, Karolinska Institutet, Stockholm, Sweeden **Transmitter-based mapping of central neurons.** In: Clark, W., Principles of psychopharmacology. 2nd ed. New York, Academic Press, 1978. 976 p. (p.71-95).

Psychoactive drug influence on transmission in the central nervous system is presented. Topics discussed are: central monoaminergic tracts; amine fluorescence histochemistry of the central monoamine neurons; immunofluorescence histochemistry of catecholamine synthesizing enzymes in the central monoamine neurons, dopamine tracts; norepinephrine tracts; epinephrine tracts; 5-hydroxytryptamine tracts; psychotropic drugs; central histaminergic tracts; central cholinergic tracts; amino acid containing neurons; and peptide containing neurons. 69 references.

000839 Greenblatt, David J.; Allen, Marcia Divoll; MacLaughlin, Dean S.; Harmatz, Jerold S.; Shader, Richard I. Clinical Pharmacology Unit, Massachusetts General Hospital, Boston, MA 02114 **Diazepam absorption: effect of antacids and food.** Clinical Pharmacology and Therapeutics. 24(5):600-609, 1978.

Nine healthy fasting volunteers were given 5mg oral diazepam with 60ml of water, 60ml of magnesium aluminum hydroxide mixture (Maalox), or 60ml of aluminum hydroxide trisilicate mixture (Gelusil) in a randomized, single dose, three-way crossover study. Plasma concentrations of diazepam and its major metabolite, desmethyldiazepam, in multiple samples drawn during the 48 hours after each dose were determined by electron capture gas/liquid chromatography. Compared with the water treatment condition, administration of diazepam with either antacid yielded lower peak plasma concentrations which were attained later after the dose, longer lag times prior to the start of absorption, and prolongation of the absorption half-life. Completeness of diazepam absorption, judged by the area under the 48-hour plasma concentration curve (AUC-48), was not influenced. In a second study, six of the subjects took diazepam after a standard breakfast. Diazepam absorption was slowed to an even greater extent than in the diazepam/antacid conditions. However, AUC-48 averaged 26% more in the diazepam/food condition than in the diazepam/water condition, suggesting enhanced absorption. Under conditions of this study, coadministration of diazepam with antacids or a standard meal reduces the rate but not the extent of absorption. 40 references. (Author abstract modified)

000840 Janowsky, David S.; Leichner, Pierre; Parker, Donal; Judd, Lewis; Huey, Leighton; Clopton, Paul. Department of Psychiatry, University of California at San Diego, Medical School, La Jolla, CA 92103 **Methylphenidate and serum prolactin in man.** Psychopharmacology (Berlin). 58(1):43-47, 1978.

The effects of methylphenidate on serum prolactin levels and the relationship of this effect to psychostimulation and cardiovasular parameters were studied in 24 psychiatric patients. Experimental subjects received a single dose of 0.5mg/kg of methylphenidate. Results indicate that prolactin levels were not significantly altered by methylphenidate; although cardiovascular response and psychostimulation, as measured by talkativeness ratings, were significantly increased in all patients for whom data were obtained. Because methylphenidate's behavioral activating properties do not parallel a significant effect on serum prolactin, such activation may not involve dopamine. However, it is possible that methylphenidate-induced behavioral activation may be medicated by such other neurotransmitters as norepinenephrine, gamma aminobutyric acid, or acetylcholine, rather than by dopamine. 24 references. (Author abstract modified)

000841 Kanto, J.; Sellman, R.; Haataja, M.; Hurme, P. Department of Pharmacology, Turku University, Central Hospital,

Turku, Finland **Plasma and urine concentrations of diazepam and its metabolites in children, adults and in diazepam-intoxicated patients.** International Journal of Clinical Pharmacology and Biopharmacy (Munchen). 16(6):258-264, 1978.

The effect of dose size on the metabolism and excretion of diazepam was investigated. The plasma and urine concentrations of diazepam and its metabolites after single dose of diazepam in children and adults was measured and compared to the results of diazepam-intoxicated patients after huge doses of diazepam. The urinary metabolites in adult patients after toxic doses of diazepam were similar to those found in children after therapeutic doses. In healthy volunteers, after a single small dose, the main diazepam metabolite in the urine was N-demethyldiazepam. In contrast to volunteers, free and conjugated oxazepam and N-methyloxazepam, as well as conjugated N-demethyldiazepam were found in the plasma of the intoxicated patients. The relative share of the hydroxylated diazepam metabolites N-methyloxazepam and oxazepam in the plasma and urine was more prominent after a high dose of diazepam in children and diazepam-intoxicated patients than in volunteers after a low dose. 17 references. (Author abstract modified)

000842 Langer, G.; Sachar, E. J.; Halpern, F. S. Psychiatrische Universitatsklinik, Lazarettgasse 14, A-1097 Vienna, Austria **Effect of dopamine and neuroleptics of plasma growth hormone and prolactin in normal men.** Psychoneuroendocrinology (Oxford). 3(2):165-169, 1978.

The effects of dopamine (DA) and neuroleptics on plasma growth hormone (GH) and prolactin (PRL) were investigated in normal male subjects. Mean plasma GH concentration was significantly elevated above baseline 30 minutes after onset of continuous DA infusion (0.3mg/minute). Intravenous administration of neuroleptics (3.0mg prochlorperazine or 0.75mg perphenazine) 30 minutes prior to the DA infusion resulted in a significant delay and attenuation of the GH response to DA. The elevated plasma PRL concentrations induced by the neuroleptics were suppressed to baseline within 60 minutes after onset of DA infusion. Since DA does not cross the blood/brain barrier (BBB), these findings indicate that GH secretion can be affected in normal men by dopaminergic mechanisms operating outside the BBB. 15 references. (Author abstract modified)

000843 Magnussen, Ib; Olivarius, Bent de Fine. University Department of Neurology, Aarhus Kommunehospital, DK-8000 Aarhus C, Denmark **Absorption deficiency of 5-hydroxyy-L-tryptophan during long-term treatment in man.** Progress in Neuro-Psychopharmacology. 2(3):395-396, 1978.

Plasma concentrations of 5-hydroxy-L-tryptophan (5-HTP) were determined by high pressure liquid chromatography in two patients receiving long-term treatment with oral 5-HTP in combination with carbidopa, an inhibitor of 5-HTP decarboxylase. Deficient accumulation of 5-HTP was found in one patient. This finding may explain why the aromatic amino acid given by mouth may fail to mimic the clinical effects of intravenous infusion. 4 references. (Author abstract modified)

000844 Mendelson, Jack H.; Ellingboe, James; Kuehnle, John C.; Mello, Nancy K. McLean Hospital, 115 Mill Street, Belmont, MA 02178 **Effects of chronic marihuana use on integrated plasma testosterone and luteinizing hormone levels.** Journal of Pharmacology and Experimental Therapeutics. 207(2):611-617, 1978.

Integrated plasma testosterone and luteinizing hormone levels were determined for 13 healthy adult males before, during, and after a 21-day period of marihuana use. No significant relationships were found between antecedent or concurrent marihuana smoking and integrated plasma testosterone value and luteinizing hormone levels. All values for all subjects obtained during the entire study were within normal limits for healthy adult males. 18 references. (Author abstract)

000845 Muller, Eugenio E.; Cocchi, Daniela; Panerai, Alberto E.; Gil-Ad, Irit; Locatelli, Vittorio; Mantegazza, Paolo. Institute of Pharmacology and Pharoacognosy, University of Cagliari, I-09100 Cagliari, Italy **Pituitary hormones and ergot alkaloids.** Pharmacology (Basel). 16(Suppl. 1):63-77, 1978.

Reports on the action of CB-154 and other ergot drugs on anterior pituitary (AP) hormone secretion, in particular growth hormone (GH) and PRL, in both experimental animals and man are reviewed. It is concluded that ergot alkaloids are both a useful tool for the study of neuroendocrine control of pituitary hormone secretion and a valid pharmacologic weapon for treatment of hyperprolactinemic states, GH, and probably ACTH and MSH hypersecretion. Ergot alkaloids are capable of a long-lasting disruption of PRL secretion from a normal or tumoral pituitary gland, are unable to affect directly the somatotrophs of an intact AP, but inhibit GH and possibly ACTH secretion from a hyperplastic or tumoral gland. Ergolines also exert clear-cut PRL lowering effects and are capable of suppressing GH secretion in acromegaly. 72 references. (Author abstract)

000846 Nowycky, Martha C.; Roth, Robert H. Dept. of Pharmacology, Yale University School of Medicine, New Haven, CT 06510 **Dopaminergic neurons: role of presynaptic receptors in the regulation of transmitter biosynthesis.** Progress in Neuro-Psychopharmacology 2(2):139-158, 1978.

The research literature on the role of presynaptic dopamine receptors in the regulation of neurotransmitter biosynthesis is reviewed, and two in vivo models for studying presynaptic receptors are described. Using these models, it was found that dopamine agonists depress biosynthesis, and dopamine antagonists reverse the effects of the agonists. Presynaptic dopamine receptors appear to modulate the increase of dopamine synthesis, and vary in sensitivity to agonists. Like postsynaptic receptors, presynaptic receptors become supersensitive after chronic treatment and withdrawal of antipsychotic drugs. 76 references. (Author abstract modified)

000847 Piafsky, Kenneth M.; Borga, Olof; Odar-Cederlof, Ingegerd; Johansson, Catja; Sjoqvist, Folke. Division of Clinical Pharmacology, Toronto Western Hospital, 399 Bathurst St., Toronto, Ontario M5T 2S8, Canada **Increased plasma protein binding of propranolol and chlorpromazine mediated by disease-induced elevations of plasma alpha1 acid glycoprotein.** New England Journal of Medicine. 299(26):1435-1439, 1978.

The importance of disease-induced increases in plasma concentrations of alpha1 acid glycoprotein was assessed through determination of binding of propranolol in plasma from 53 patients and 25 healthy volunteers. Binding was increased in 10 patients with Crohn's disease, nine with inflammatory arthritis, and eight with chronic renal failure with superimposed inflammatory disease as compared with healthy controls. The plasma binding of control subjects did not differ from that of 12 patients with chronic hepatic disease or 14 with uncomplicated renal failure. Chlorpromazine binding, determined in 60 subjects, yielded similar results. Percentages of free drug and alpha1 acid glycoprotein concentration were inversely correlated. It is reported that increases in plasma protein binding in patients with inflammatory disease appear to be mediated by increases in alpha1 acid glycoprotein concentration, which may influence drug kinetic. 25 references. (Author abstract modified)

000848 Rakoff, J. S.; Yen, S. S. C. Department of Reproductive Medicine, School of Medicine, University of California, San Diego, La Jolla, CA 92093 **Progesterone-induced acute release of**

prolactin in estrogen-primed ovariectomized women. Journal of Clinical Endocrinology and Metabolism. 47(4):918-921, 1978.

Progesterone (10mg, intramuscularly) induced a concurrent release of prolactin (PRL), follicle stimulating hormone (FSH), and luteinizing hormone (LH) in estrogen primed ovariectomized women. Th time course of pituitary release of the three hormones included a latent phase of 4 hours and was maintained for at least 5 hours. The hormonal elevations in response to progesterone occurred in all five Ss, and the magnitude of the rise was not correlated with the duration or dose of prior estrogen treatment. This effect of progesterone on PRL and gonadotropin may be mediated through a reduction of hypothalamic dopamine. 24 references. (Author abstract modified)

000849 Redding, Tommie W.; Kastin, Abba J.; Nikolics, Karoly; Schally, Andrew V.; Coy, David H. Veterans Administration Hospital, 1601 Perdido Street, New Orleans, LA 70146 **Disappearance and excretion of labeled alpha-MSH in man.** Pharmacology Biochemistry and Behavior. 9(2):207-212, 1978.

The metabolism and urinary excretion of alpha-melanocyte stimulating hormone (aMSH) was investigated in a healthy male subject, following intravenous injection of 15mcCi tritiated aMSH. A plot of the disappearance time in plasma was characteristic of a multiexponential curve, the linear components of which were resolved by the subtraction method and half time disappearance calculated directly from the slope of the regression line. The half time disappearance was 1 minute for the first component and 25 minutes for the second. After intravenous administration of 50mcCi of 125-labeled aMSH in a second experiment, the two components showed half time disappearances of 1 minute and 4.8minutes. These times were not affected by precipitation of the plasma with 10% trichloracetic acid. Four hours after the injection of 3H-aMSH or 125I-aMSH, 38% and 42% of the label appeared in the urine. Results suggest that the persistence of high levels of aMSH in the blood after injection in humans may be too short to fully explain the central effects of aMSH. 23 references. (Author abstract modified)

000850 Rossi, G. L. Institut fur Tierpathologie, Universitat Bern, Postfach 2735, CH-3000 Bern, Switzerland **Effects of 2-bromo-alpha-ergocryptine on the ultrastructure of anterior pituitaries in different experimental conditions.** Pharmacology (Basel). 16(Suppl. 1):193-203, 1978.

The morphology of anterior pituitaries was investigated by electron microscopy after administration of 2-bromo-alpha-ergocryptine (CB-154) in different experimental conditions. Those included: 1) a 1-5 week treatment (1mg/kg BW, daily) to rats and a 5-week treatment (0.3mg/kg BW, daily) to dogs, 2) a single injection (2.5mg/kg BW, 4 hours before autopsy) or a 15-day treatment (1mg/kg BW, daily) to hypophysectomized rats bearing an ectopic pituitary, 3) a single injection (10mg/kg BW, 4 hours before autopsy) to rats bearing the experimental MtW 15 tumor, and 4) an in vitro experiment with fragments of a human growth hormone (GH) producing adenoma incubated for 2 hours in a medium containing CB-154 (1mcg/ml). Some possible explanations for the structural changes observed after CB-154 treatment are offered. (Author abstract)

000851 Rowe, Howard; Carmichael, Ralph; Lemberger, Louis. Lilly Laboratory for Clinical Research, Wishard Memorial Hospital, Indianapolis, IN 46202 **The effect of fluoxetine on warfarin metabolism in the rat and man.** Life Sciences. 23(8):807-812, 1978.

The effects of fluoxetine on warfarin metabolism in male Wistar rats and in normal human volunteers were examined. Fluoxetine, a selective blocker of serotonin uptake, inhibited the metabolism of warfarin in rats. However, no inhibition of warfarin metabolism was observed in humans after a single dose or seven daily doses of fluoxetine. 9 references. (Author abstract modified)

000852 Rubin, Robert T.; Poland, Russell E.; Sobel, Irving; Tower, Barbara B.; Odell, William D. B-4 Neuroendocrine Laboratory, Harbor General Hospital, Torrance, CA 90509 **Effects of prolactin and prolactin plus luteinizing hormone on plasma testosterone levels in normal adult men.** Journal of Clinical Endocrinology and Metabolism. 47(2):447-452, 1978.

Plasma testosterone (T) levels following haloperidol-induced increases in prolactin (PRL) levels were studied and the potential synergism of PRL and luteinizing hormone (LH) in influencing T levels on a short-term basis in normal men was evaluated. Eight volunteers were administered LH and saline or haloperidol and then assessed for PRL and LH plasma levels in a double-blind study. Five subjects had prompt PRL responses to haloperidol, and these 5 subjects were evaluated for changes in plasma T. After haloperidol administration, their plasma PRL levels rose to the high normal levels, and on saline control days they showed a normal diurnal decline. After .5mg haloperidol, T levels were maintained for several hours. Increased PRL levels concommitant with human LH injection did not produce a T response greater than that caused by LRH alone. Results fail to demonstrate a synergistic effect of acutely increased PRL on LH stimulated T secretion. PRL appears to be capable of increasing T in adult men, but is clearly a weaker stimulus than LH. 24 references. (Author abstract modified)

000853 Shen, Danny D.; Fixley, Mark; Azarnoff, Daniel L. Department of Medicine, Clinical Pharmacology-Toxicology Center, University of Kansas Medical Center, Kansas City, KS 66103 **Theophylline bioavailability following chronic dosing of an elixir and two solid dosage forms.** Journal of Pharmaceutical Sciences. 67(7):916-919, 1978.

Theophylline bioavailability following chronic dosing of an elixir, an acute dose of elixir, and two commercial tablet formulations was evaluated in healthy volunteers. Both tablet formulations contained ephedrine; tablet 1 also contained hydroxyzine hydrochloride and tablet 2 contained phenobarbital. The mean area under the serum concentration/time curve (AUC) was highest after chronic administration of the elixir. There was a large variation in the elimination half-life among the four theophylline treatments: the mean half-life was longest after chronic elixir, followed by tablet 1, tablet 2, and acute elixir. The AUC values for the four treatments, when corrected for differences in half-life were no longer significantly different, indicating that the extent of theophylline absorption was essentially the same for all tested products. The time to peak and the peak serum concentrations also did not differ among treatments. The prolongation in half-life following chronic treatment with the elixir and its subsequent shortening during tablet administration suggest an initial inhibition followed by induction of theophylline metabolism. These changes may be due to the prolonged treatment with theophylline itself or the other drug ingredients in the dosage form. 27 references. (Author abstract modified)

000854 Speth, Robert C.; Wastek, Gregory J.; Johnson, Peter C.; Yamamura, Henry I. Department of Pharmacology, College of Medicine, University of Arizona Health Science Center, Tucson, AZ 85724 **Benzodiazepine binding in human brain: characterization using (3H)flunitrazepam.** Life Sciences (Oxford). 22(10):859-866, 1978.

Tritiated flunitrazepam was used to characterize benzodiazepine binding sites in human brain. The benzodiazepine sites showed high affinity, pharmacological specificity, and saturability in their binding of (3H)flunitrazepam. The dissociation con-

stant of (3H)flunitrazepam binding was in the range of 2-3nM. The potency of several benzodiazepine analogs in inhibiting specific (3H)flunitrazepam binding in vitro correlated well with their potencies in several in vivo human and animal tests. The density of (3H)flunitrazepam binding sites was highest in the cerebrocortical and rhinencephalic areas, intermediate in the cerebellum, and lowest in the brainstem and commissural tracts. 14 references. (Author abstract)

000855 Stanski, Donald R.; Greenblatt, David J.; Lowenstein, Edward. Division of Clinical Pharmacology, University of California, San Francisco, CA **Kinetics of intravenous and intramuscular morphine.** Clinical Pharmacology and Therapeutics. 24(1):52-59, 1978.

Plasma morphine concentrations were determined by radioimmunoassay in multiple blood samples drawn after administration of 10mg morphine sulfate by intravenous infusion (IV), intramuscular injection (IM), or both to healthy young adult male volunteers. Mean kinetic parameters following IV morphine were: volume of distribution, 3.2L/kg; elimination half-life, 2.9hours; clearance 14.7ml/minute/kg; extraction ratio, 0.70. After IM morphine, peak plasma levels ranged from 51-62ng/ml and were reached within 20 minutes of injection. The absorption half-life averaged 7.7minutes. Systemic availability was 100% complete. In a second study, four elderly male patients were given 45-80mg IV morphine sulfate prior to operative repair of an abdominal aortic aneurysm. In these patients, kinetic variables were: volume of distribution, 4.7L/kg; elimination half-life, 4.5hours; clearance, 12.4ml/minute/kg; extraction ratio, 0.59. Results indicate that morphine distribution is rapid and extensive, with a relatively short half-life. 22 references. (Author abstract modified)

000856 Thorner, M. O.; Ryan, Susan M.; Wass, J. A. H.; Jones, Ann; Bouloux, P.; Williams, Sally; Besser, G. M. Division of Endocrinology, Department of Internal Medicine, University of Virginia School of Medicine, Charlottesville, VA 22901 **Effect of the dopamine agonist, lergotrile mesylate, on circulating anterior pituitary hormones in man.** Journal of Clinical Endocrinology and Metabolism. 47(2):372-378, 1978.

The effects of the ergoline derivative, lergotrile mesylate, on the serum levels of prolactin (PRL), growth hormone (GH), luteinizing hormone, cortisol, blood sugar, and other hormones were studied in six normal male humans and eight patients with acromegaly (two of whom also had idiopathic hyperprolactinemia). Blood sugar levels were unaltered; serum cortisol was elevated in five of six subjects; there was a brief depression of diastolic blood pressure, but no change in pulse rate. The side-effects after lergotrile were variable, with drowsiness as a consistent feature. These actions are similar to those of bromocriptine (an ergot derivative with a tripeptide side chain), now clinically used in the treatment of hyperprolactinemia and acromegaly, to suppress PRL and GH secretion, and in parkinsonism. Lergotrile had been expected to fulfill these clinical uses; however, in the studies comparing the effects of single oral doses of lergotrile (2mg) and bromocriptine (2.5mg) on GH and PRL secretion in patients with acromegaly and hyperprolactinemia, lergotrile in the dose used has been found to have an earlier onset and shorter duration of action. 32 references. (Author abstract modified)

000857 Trabucchi, M.; Hofmann, M.; Montefusco, O.; Spano, P. F. Department of Pharmacology and Therapeutics, University of Brescia, Brescia, Italy **Ergot alkaloids and cyclic nucleotides in the CNS.** Pharmacology (Basel). 16(Suppl. 1):150-155, 1978.

The various effects of different ergot alkaloids on cyclic nucleotides in the central nervous system are reviewed. Ergotamine and dihydroergotamine show a higher blocking effect toward the dopamine-induced stimulation of adenylate cyclase activity than to the apomorphine-induced stimulation. Bromocriptine blocks in a more competitive way the activation of adenylate cyclase-induced in vitro by dopamine, but increases the levels of cAMP in rat striatum in vitro. This effect is blocked by haloperidol and reserpine when given with bromocriptine. On the basis of biochemical observations and various behavioral data, the drug has been used in the treatment of parkinsonism with contrasting results. Moreover bromocriptine induces a marked decrease of cyclic 3':5'-guanosine monophosphate (cGMP) levels in cerebellum such as haloperidol and chlorpromazine, while apomorphine and other dopaminergic drugs increase the levels of cGMP. At the dose of 1mg/kg, bromocriptine as well as DH-ergotoxine markedly reduce the levels of striatal dihydroxyphenylacetic acid. 28 references. (Author abstract modified)

000858 Wan, Suk Han; Matin, Shaikh B.; Azarnoff, Daniel L. School of Pharmacy, Pharmaceutical Science Center, University of Southern California, 1985 Zonal Avenue, Los Angeles, CA 90033 **Kinetics, salivary excretion of amphetamine isomers, and effect of urinary pH.** Clinical Pharmacology and Therapeutics. 23(5):585-590, 1978.

Amphetamine was administered to healthy subjects in its racemic and isomeric forms under conditions of urine acidification and alkalinization. Plasma and saliva concentrations of each isomer were measured, and the kinetics of the individual isomers were determined. Results indicate that ()-amphetamine is eliminated more rapidly than (-)-amphetamine. The difference in half-life between isomers was maximal under basic urinary pH conditions. Saliva amphetamine levels were higher than plasma levels and were proportional to plasma drug levels in the postabsorptive phase. 14 references. (Author abstract modified)

000859 Wastek, Gregory John. University of Arizona **Neurotransmitter and receptor alterations in neuropsychiatric diseases. (Ph.D. dissertation).** Dissertation Abstracts International. 39(1):46-B, 1978. Ann Arbor, Univ. Microfilms No. 7811508. 1978.

In a study of neurotransmitter and receptor alterations in neuropsychiatric diseases, (3H)-3-quinuclidinyl benzilate (QNB) was used to analyze muscarine receptor binding in three areas of normal human brain (frontal cortex, putamen, and hippocampus), and GABA levels in cerebrospinal fluid (CSF) of patients with Huntington's disease and various neurological disorders were compared. In each of the three brain regions, specific ligand binding was linear up to approximately 0.83 mg tissue protein/assay. Muscarine agonists and antagonists inhibited specific (3H)-QNB binding. Huntington's diseased brains showed significant decreases in muscarine receptor binding in the caudate nucleus and putamen, and significant decreases in choline acetyltransferase activity in the caudate nucleus, putamen, and globus pallidus. GABA levels in CSF were found to reflect brain levels of GABA, and are recommended as a diagnostic aid in Huntington's disease. (Journal abstract modified)

000860 Wilensky, Alan J.; Levy, Rene H.; Troupin, Allan S.; Moretti-Ojemann, Linda; Friel, Patrick. Epilepsy Center, ZA-50, Harborview Medical Center, Seattle, WA 98104 **Clorazepate kinetics in treated epileptics.** Clinical Pharmacology and Therapeutics. 24(1):22-30, 1978.

The kinetics of clorazepate were investigated in epileptic patients after single and multiple oral doses. Peak serum concentrations of desmethyldiazepam occurred in 0.5-1 hour. There ap-

peared to be a brief lag before rapid absorption. Serum concentration curves were best fitted by the two-compartment open model. The apparent half-life of the distribution phase was 1.28 hours, and the half-life of the disposition phase was 40.8hours. Serum concentrations rose after meals. Whole body apparent volume of distribution was 1.63L/kg. Total plasma clearance was 34.4ml/minute, which is greater than clearance levels for desmethyldiazepam in normals. This discrepancy illustrates the hazards of extrapolating data collected in normals to patients with multiple drug exposures. 21 references. (Author abstract modified)

000861 Wuster, Michael; Loth, Petra; Schulz, Rudiger. Department of Neuropharmacology, Max-Planck-Institut fur Psychiatrie, Kraepelinstrasse 2, D-8000 Munich 40, Germany **Characterization of opiate-like materials in blood and urine.** Advances in Biochemical Psychopharmacology. 18:313-319, 1978.

Opiate-like materials isolated from human blood and urine were characterized and compared with the opioid peptides beta-endorphin and methionine-enkephalin. The opiate-like materials from blood and urine had lipophilicity, resistance to pronase P, slow onset of action in the guinea-pig ileum and mouse vas deferens preparations, greater potency in the ileum than in the vas deferens, and a high resistance to acid hydrolysis. None of these properties is exhibited by the known opioid peptides. No evidence was obtained to indicate that the materials from blood and urine are peptides, and none of the materials interacted with antibodies to enkephalin or morphine. 9 references.

000862 Ziegler, Vincent E.; Biggs, John T.; Wylie, Laurence T.; Coryell, William H.; Hanifl, Kathleen M.; Hawf, Donald J.; Rosen, Samuel H. Department of Psychiatry, Washington University School of Medicine, 4940 Audubon Avenue, St. Louis, MO 63110 **Protriptyline kinetics.** Clinical Pharmacology and Therapeutics. 23(5):580-584, 1978.

The kinetics of the tricyclic antidepressant protriptyline were examined in eight subjects after a single oral dose of 30mg protriptyline hydrochloride. Peak protriptyline levels ranged from 10.4-22.3ng/ml and were reached 6-12 hours after the oral dose. The mean protriptyline half-life was 74.3hours and ranged from 53.6-91.7hours in individual subjects. The estimated first pass metabolism of protriptyline was relatively small, ranging from 10-25%, assuming complete absorption. The mean volume of distribution was 22.5L/kg, with a range of 15.0-31.2L/kg. No relatinship was found between the kinetics of protriptyline and those of doxepin in these Ss. 17 references. (Author abstract modified)

000863 Ziegler, Vincent E.; Biggs, John T.; Wylie, Laurence T.; Rosen, Samuel H.; Hawf, Donald J.; Coryell, William H. Department of Psychiatry, Washington University School of Medicine, 4940 Audubon Avenue, St. Louis, MO 63110 **Doxepin kinetics.** Clinical Pharmacology and Therapeutics. 23(5):573-579, 1978.

The kinetics of the tricyclic antidepressant doxepin hydrochloride (DOX) were studied in seven volunteers after the oral administration of 75mg DOX. Peak plasma concentrations of DOX ranged from 8.8-45.8ng/ml and were reached within 4 hours. The disappearance of DOX was biphasic and followed first order kinetics. The half-life for DOX ranged from 8.2-24.5hours, with a mean of 16.8hours; the mean apparent volume of distribution was 20.2L/kg, ranging from 9.1-33.3L/kg. The estimated first pass metabolism of DOX ranged from 55-87% of the oral dose, assuming complete absorption. Significant quantities of the metabolite desmethyldoxepin (DMD) were produced. Peak levels of DMD ranged from 4.8-14.5ng/ml and were reached between 2-10 hours after administration. The mean half-life of DMD was 51.3hours, ranging from 33.2-80.7hours. The amount of DMD produced correlated with the plasma concentration of DOX. 28 references. Author abstract modified)

14 MECHANISM OF ACTION: BEHAVIORAL

000864 Bowen, Angela J. 1006 West 5th Avenue, Olympia, WA 98502 **Comparative efficacy of triazolam, flurazepam and placebo in outpatient insomniacs.** Journal of International Medical Research (Northampton). 6(4):337-342, 1978.

The short-term hypnotic efficacy of triazolam (0.5mg and 0.25mg) was compared to that of flurazepam (15mg and 30mg) and placebo in 120 outpatient insomniacs. Each patient was studied with a 2-night double-blind crossover trial. Triazolam (0.5mg) was preferred to both placebo and flurazepam (30mg). Triazolam (0.5mg) was superior to placebo in improving quality of sleep, shortening sleep onset, increasing sleep duration, and reducing the number of night-time awakenings. Triazolam (0.5mg) was superior to flurazepam (30mg) in speeding sleep onset and increasing the quality of sleep. Triazolam (0.25mg) was preferred to flurazepam and was significantly better than flurazepam on all sleep questions. Triazolam (0.25mg) was preferred by more patients than flurazepam (30mg) and was judged equally efficacious on individual sleep questions. Reports of side-effects were minimal for both drugs. 8 references. (Author abstract)

000865 Brantigan, Thomas A.; Brantigan, Charles O.; Joseph, Neil H. Department of Music, University of Nebraska, Omaha, NE 68101 **Beta-blockade and musical performance.** Lancet (London). 2(8095):896, 1978.

The effect of beta-blockade on stage fright in musicians was investigated. Propranolol was administered to pianists in a double crossover trial. Beta-blockade was observed to have obvious effects in reducing the physical manifestations of stage fright in musicians selected for history of stage fright. It is asserted that control of the physical manifestations of stage fright does not alleviate the psychological impairment of ability to perform. Posthypnotic suggestion is offered as a means of controlling psychological components of stage fright. 2 references.

000866 Carney, Anthony; Bancroft, John; Matthews, Andrew. Regional Hospital, Galway, England **Combination of hormonal and psychological treatment for female sexual unresponsiveness: a comparative study.** British Journal of Psychiatry (London). 133(October):339-346, 1978.

A comparative, controlled study of the combination of hormonal and psychological treatment for female sexual unresponsiveness is described. Treatment of 32 couples involved a combination of drug therapy and counseling. Half the Ss received testosterone and half diazepam; half received weekly and half monthly counseling. Those receiving testosterone did significantly better on a number of behavioral and attitudinal measures than the diazepam group. There were no notable differences in outcome between the two counseling groups. In addition, there were no undesirable side-effects with the testosterone. 9 references. (Author abstract modified)

000867 Crome, Peter; Newman, Belinda. Poisons Unit, New Cross Hospital, Avonley Road, London SE14, England **A comparison of the effects of single doses of mianserin and amitriptyline on psychomotor tests in normal volunteers.** Journal of International Medical Research (Northampton). 6(6):430-434, 1978.

Eight healthy volunteers received single doses of either mianserin, amitriptyline, or placebo and critical flicker frequency, reaction time, digit substitution and addition times were tested up to 6 hours afterwards. Mianserin (20mg) and amitriptyline

(25mg) significantly prolonged reaction time and mianserin (10mg and 20mg) significantly reduced critical flicker frequency. No other significant effects were observed. Patients should be warned of possible sedation when first starting treatment with mianserin. 9 references. (Author abstract)

000868 Davis, Kenneth L.; Mohs, Richard C.; Tinklenberg, Jared R.; Pfefferbaum, Adolf; Hollister, Leo E.; Kopell, Bert S. Veterans Administration Hospital, 3801 Miranda Ave., Palo Alto, CA 94304 **Physostigmine: improvement of long-term memory processes in normal humans.** Science. 201(4352):272-274, 1978.

The effect of physostigmine on long-term memory in 19 normal male subjects was investigated. Subjects received 1.0mg of physostigmine or 1.0mg of saline by a slow intravenous infusion on two nonconsecutive days and were then asked to perform two verbal learning tasks. Results indicate that physostigmine significantly enhanced storage of information into long-term memory and also improved retrieval of information from long-term memory. Short-term memory processes were not found to be significantly altered by physostigmine. 35 references. (Author abstract modified)

000869 Dement, William C; Carskadon, Mary A.; Mitler, Merrill M; Phillips, Robert L; Zarcone, Vincent P. Sleep Research Center, Stanford University School of Medicine, Stanford, CA 94305 **Prolonged use of flurazepam: a sleep laboratory study.** Behavioral Medicine. 5(10):25-31, 1978.

The efficacy of flurazepam 30mg over a 4-week period of ingestion by five insomniac subjects was examined. Sleep induction and maintenance, sleep stucture, development of tolerance, and morning sleepiness were measured. The results indicate that the initial effectiveness of flurazepam was maintained over the period of administration. There was no evidence that tolerance or dependency developed over 4 weeks of nightly use. 23 references.

000870 Gillin, J. Christian; Sitaram, N.; Mendelson, Wallace B.; Wyatt, Richard J. Bldg. 10, Room 3N224, National Institutes of Health, Bethesda, Maryland 20014 **Physostigmine alters onset but not duration of REM sleep in man.** Psychopharmacology (Berlin). 58(1):111-114, 1978.

The effect of a prolonged infusion of physostigmine was investigated to determine whether physostigmine affected only the time at which REM sleep occurred or whether it affected the duration of REM sleep as well. Physostigmine (1.0mg) or placebo were administered intravenously over a 1-hour period to seven male normal volunteers beginning 35 minutes after sleep onset. The results indicate that physostigmine induced the onset REM sleep but did not significantly alter the duration of individual REM sleep periods. Physostigmine also markedly advanced the onset of the succeeding REM period and shortened the duration of the second nonREM period, as well as advancing succeeding REM-nonREM sleep cycles relative to sleep onset even when the duration of each cycle was unaffected. Other experimental evidence of physostigmine's effects on the duration of REM sleep is discussed. 11 references. (Author abstract modified)

000871 Glass, Richard M.; Uhlenhuth, E. H.; Weinreb, Herman. Department of Psychiatry, University of Chicago, Chicago, Il 60637 **Imipramine-reversible cognitive deficit in outpatient depressives.** Psychopharmacology Bulletin. 14(2):10-12, 1978.

The effects of imipramine treatment on short-term memory in depressed outpatients were examined using a patient own control design. Each patient received imipramine (75mg for the first 3 days and 150mg for the rest of the treatment period) and placebo under double-blind conditions in a multiple crossover plan with four treatment periods of three weeks' duration. Results indicate that target symptom change was effected significantly. Lift-off reaction time was improved significantly. There was no change in the tapping speed due to the imipramine treatment. The mean decreased in errors after placebo periods. There was an increase in pulse rate and respiratory rate under imipramine treatment. This suggests that imipramine did increase central arousal. These findings indicate that drug-induced improvement in cognitive function perhaps related to increased arousal, may produce significant changes in the clinical manifestations of the depression. 10 references. (Author abstract modified)

000872 Haegeman, J.; Duyck, F. Wijngaardstraat 20, B-9500 Geraardsbergen, Belgium **A retrospective evaluation of pipamperone (Dipiperon) in the treatment of behavioural deviations in severely mentally handicapped.** Acta Psychiatrica Belgica (Bruxelles). 78(Part 2):392-398, 1978.

Treatment of behavioral deviations in severely mentally handicapped patients with pipamperone (Dipiperon), a neuroleptic with hypnosedative properties and potent antitryptamine action, was evaluated. Nineteen female patients 15-24 years old, whose IQ was between less than 30 to 36, were treated. The dose varied from 40mg/day to 180mg/day spread over one to three intakes. The duration of treatment ranged between 2 and 10 months. The therapeutic effect was evaluated by means of a 12-item rating-scale. A statistically significant improvement was obtained from nine of the 12 items. Overall improvement was very good in 2, good in 10, moderate in 5, and insufficient in 2 patients. Serious side-effects were not observed. 5 references. (Author abstract modified)

000873 Halmi, Katherine A.; Goldberg, Solomon C. Department of Psychiatry, University of Iowa, Iowa City, IA **Cyproheptadine in anorexia nervosa.** Psychopharmacology Bulletin. 14(2):31-33, 1978.

Effects of cyproheptadine and behavior modification on weight gain were studied in hospitalized anorexia nervosa patients. Analysis showed a nonsignificant difference favoring drug treatment. The greatest drug benefit was observed in patients with the greatest percent weight loss. Patients with the greatest number of prior treatment failures (less than 2kg gain) showed greatest drug benefit from among those who received outpatient treatment. 11 references.

000874 Hodgkinson, Robert; Bhatt, M.; Grewal, G.; Marx, G. F. University of Texas Health Science Center, 7703 Floyd Curl Drive, San Antonio, TX 78284 **Neonatal neurobehavior in the first 48 hours of life: effect of the administration of meperidine with and without naloxone in the mother.** Pediatrics. 62(3):294-298, 1978.

An experiment was conducted to determine whether naloxone administered intravenously would reverse neonatal neurobehavioral depression induced by meperidine, as measured by the early neonatal neurobehavioral scale (ENNS) at 2, 4, and 24 hours of life. The ENNS was administered to three groups of babies: (1) 28 babies whose mothers had received no narcotics, (2) 33 babies whose mothers had received meperidine alone during labor, and (3) 40 babies whose mothers had received meperidine followed by naloxone about 15 minutes before delivery. Results showed that greater percentages of babies unexposed to narcotics, as well as those exposed to meperidine followed by naloxone, had higher scores on the ENNS. It is concluded that naloxone given intravenously to the mother reverses the effect of meperidine on neonatal neurobehavior for approximately 2 hours after birth. At 4 and 24 hours, however, the neurobeha-

vior of neonates exposed to meperidine and naloxone is depressed almost as much as that of babies exposed to meperidine alone. 11 references. (Author abstract modified)

000875 Kazarian, Shahe S.; Tekatch, Gordon M.; Ifabumuyi, Omatayo I.; Deinum, E. J. L.; Merskey, Harold. London Psychiatric Hospital, London, Ontario, Canada **Effects of antianxiety agents on relaxation training. A preliminary investigation.** Canadian Psychiatric Association Journal (Ottawa). 23(6):389-394, 1978.

The effects of antianxiety agent such as minor tranquilizers, sedatives, and hypnotics on relaxation training was studied using 14 patients referred to the group due to tension/anxiety complaints. Results for those patients who were not having any psychotropic medication were compared with results for those who were receiving anxiolytic drugs. Self-report measures indicate that the relaxation-only group benefitted more from relaxation training and showed more treatment generalization effects. It is concluded that antianxiety drugs may have an interfering effect on relaxation training. 14 references.

000876 Kirk-Smith, Michael; Booth, D. A.; Carroll, D.; Davies, P. Dept. of Psychology, University of Birmingham, P.O. Box 363, Birmingham B15 2TT, England **Human social attitudes affected by androstenol.** Research Communications in Psychology, Psychiatry and Behavior. 3(4):379-384, 1978.

Twelve male and 12 female undergraduates judged photographs while wearing masks some of which contained androstenol (which has musky or urinous odors and is more readily detected by women than men) to determine the effect of a naturally-secreted pure odor on measurements of sexual and agonistic relations among human subjects. It was found that androstenol made the photographed women appear sexually more attractive in the judgment of both men and women, with a conceptually-related and weaker effect on judgments about the photographed men. The factorially distinct judgments of aggressive defensiveness showed an effect of androstenol specific to the sex of the subject. It is noted that some or all of the effects observed could be attributed to conditioning to the odor in the sexual or other social situations where musk-containing perfumed products are in frequent use. 10 references. (Author abstract modified)

000877 Kotzan, Jeffrey A. School of Pharmacy, University of Georgia, Athens, GA 30602 **Effect of diazepam on cognition via pupillometry.** Journal of Pharmaceutical Sciences. 67(7):956-958, 1978.

Continuous pupillary readings in response to a random digit cognition task were obtained for 10 male subjects given 10mg diazepam and 10 subjects given placebo. Additional pupillary curves were recorded for both groups at 1 and 2 hours and compared to the initial curve. Subjects were required to repeat the exact sequence of seven randomized digits as a measure of performance. Results indicate that the diazepam group had significantly depressed pupillary response. In addition, drug administration significantly reduced the subjects' ability to recall the seven randomized digits. 25 references. (Author abstract modified)

000878 Lacey, J. Hubert; Stanley, Pat; Hartmann, Margot; Koval, John; Crisp, A. H. Academic Department of Psychiatry, St. George's Hospital Medical School, London SW17, England **The immediate effect of intravenous specific nutrients on EEG sleep.** Electroencephalography and Clinical Neurophysiology (Amsterdam). 44(3):275-280, 1978.

The specific and immediate effects of intravenous amino acids and glucose on the nocturnal EEG of volunteers were studied. Slow wave sleep was increased in nine normal females by both solutions, while dream sleep was increased by glucose and decreased by amino acids. Total sleep time was not affected. Subjective feelings as to restlessness, quality, and depth of sleep under the impact of the solutions were examined. The effect of nutrition on sleep is discussed, and theories as to the function of the main sleep component are supported. 21 references. (Author abstract modified)

000879 Michiels, W.; Fryc, O.; Meyer, J. J. Institut de medecine legale de l'Universite de Geneve, 8, passage de la radio, CH-1211 Geneva 4, Switzerland **/The effects of tetrabamate, phenobarbital, and alcohol on the perceptual motor components necessary for driving./** Effet du tetrabamate, du phenobarbital et d'une faible quantite d'alcool sur quelques aspects perceptivo-moteurs en relation avec la conduite automobile. Schweizerische Medizinische Wochenschrift (Basel). 108(17):640-646, 1978.

The respective effects of a dose of 300mg tetrabamate administered daily for 1 week, 45mg phenobarbital administered daily for 1 week, and of a small amount of alcohol alone or associated with one or the other of these drugs on several perceptual motor components involved in driving were investigated. These components were measured by testing signal detection of threshold contrast under mesopic vision following glare and without glare, critical fusion frequency, perceptual motor reaction pattern for simple reaction time or choice reaction time during which the different signals do not appear with the same probability, and perceptual style by means of the rod and frame test. Results confirm the negative effects of phenobarbital and of alcohol. Tetrabamate had no significant effects. The interpretation of the results concerning the association of drugs is discussed. 15 references. (Author abstract modified)

000880 Miller, Loren; Cornett, Teresa; McFarland, Dennis. Veterans Administration Hospital, Cooper Drive Division, Lexington, KY 40507 **Marihuana: an analysis of storage and retrieval deficits in memory with the technique of restricted reminding.** Pharmacology Biochemistry and Behavior. 8(4):327-332, 1978.

The effect of marihuana on storage, retention, and retrieval processes was studied by using a restricted reminding technique. A simple word list learning technique was used. Twelve male Ss were administered marihuana and placebo in two separate sessions separated by one week. Each S served as his own drug control. Fifteen min after smoking a 500mg marihuana cigarette containing 2.1% delta9-tetrahydrocannabinol (THC) or a placebo cigarette, each S was presented with a 30-item word list and then required to recall it in writing. Half of the Ss in the first session recalled one list while the other half recalled a second similarly constructed list. The lists were reversed during the second session. Following the initial recall test, only those words not recalled were presented again. Presentation of a given word continued only until an item was recalled once. There were 12 recall trials. This method, termed restricted reminding, allows for the simultaneous evaluation of storage and retrieval without confounding due to continuous presentation. Critical data were the number of items recalled without presentation following initial recall. Results indicate that marihuana produces a slower rate of acquisition of items into storage in comparison to placebo, although the same number of items were eventually stored under both conditions. The drug appeared to exert its most deleterious effect on the retrieval of information from long-term storage. 16 references. (Author abstract)

000881 Nakano, Shigeyuki; Hollister, Leo E. Department of Pharmacology, Ehime University School of Medicine, Japan No **circadian effect on nortriptyline kinetics in man.** Clinical Pharmacology and Therapeutics. 23(2):199-203, 1978.

Differences in kinetics following single oral doses at different times of the day were investigated. Ten normal men were administered a single 100mg dose at 9:00 AM on one occasion and at 9:00 PM on another occasion. Only minimal differences in kinetic parameters were observed, none enough to be of any clinical consequence. A rather high first pass metabolism of the drug was evident by high plasma concentrations of 10-hydroxynortriptyline. It is concluded that it is unlikely that the recent custom of giving single daily doses of tricyclic antidepressants in the evening excludes regimens with more favorable drug kinetics. 21 references. (Author abstract modified)

000882 Okawa, K. Kay; Allen, George S. 425 Medical Drive, Suite 108, Bountiful, UT 84010 **A clinical comparison of triazolam with placebo and with secobarbital in insomniac patients.** Journal of International Medical Research (Northampton). 6(4):343-347, 1978.

In a clinical setting, 76 outpatient insomniacs participated in three different 2-night, double-blind crossover trials investigating the hypnotic efficacy and safety of triazolam. Triazolam (0.5mg) was compared to placebo in one trial and to secobarbital (100mg) in two additional trials. The results of the latter two studies were combined and the data showed triazolam to be superior to either placebo or secobarbital on the following parameters: how much the medication helps the patient sleep; onset of sleep; duration of sleep; and number of nocturnal awakenings. No differences were observed between treatments in any trial with regard to the patient's feeling of alertness the next morning. The side-effects reported for all treatments did not significantly interfere with the patients' ability to function. 8 references. (Author abstract)

000883 Paquet, C.; Gaillard, J.- M.; Tissot, R. Tissot: Clinique Psychiatrique de l'Universite Bel-Air pres Geneve, CH-1225 Chene-Bourg, Switzerland **/Flunitrazepam and memory./** Flunitrazepam et memoire. Acta Psychiatrica Belgica (Bruxelles). 78(Part 2):374-382, 1978.

The occurrence of memory problems was studied as a side-effect of the drug flunitrazepam in an 8-day experiment. Eight subjects aged 28 to 60 years, none of them suffering from memory problems, were tested in two sessions for memory loss after doses of flunitrazepam (33mcg/KG) or placebo. The effect of the drug was assessed according to the performance of the subjects in memory tests. Three kinds of tests were performed at each session in the evening after medication and on the day following the administration of the drug. Results show that both immediate and deferred memory is significantly disturbed by flunitrazepam. Powers of alertness and recognition are not affected. 1 reference. (Journal abstract modified)

000884 Rossi, A. Michael; Kuehnle, John C.; Mendelson, Jack H. Alcohol and Drug Abuse Research Center, Harvard Medical School - McLean Hospital, Belmont, MA 02178 **Marihuana and mood in human volunteers.** Pharmacology Biochemistry and Behavior. 8(4):447-453, 1978.

The effects of marihuana and group atmosphere on mood following marihuana use were studied in human volunteers. Fifteen adult male marihuana smokers volunteered to live on a hospital research ward for a 31-day study which included a 5-day baseline, a 21-day marihuana smoking period, and a concluding 5-day baseline. Ss rated their mood and level of intoxication each day at scheduled occasions. Analyses of variance indicated a significant trend in the mood ratings which increased slightly in the euphoric direction just before smoking marihuana and further increased slightly after smoking marihuana. Level of intoxication ratings and mood ratings were not significantly correlated, but an intoxicated S's mood ratings were significantly correlated with the average mood ratings of other Ss intoxicated or not. Results suggest that marihuana may increase a person's susceptibility to the moods of others, and the feeling of being in harmony with others may be a positive reinforcer. 42 references. (Author abstract)

000885 Setyonegoro, R. Kusumanto; Budiman, M.; Hardjawana, B.; Sobari, T.; Dhoemandi, E. Sanatorium Dharmawangsa, Jalan Dharmawangsa, Blok P.II, Kebayoran, Baru, Indonesia **Learning difficulties of Indonesian children treated with pyrithioxine.** Modern Medicine of Asia (Hong Kong). 14(6):39-42, 1978.

The use of pyrithioxine to improve the academic performance of individuals with disturbances in intellectual development is discussed. A review of the literature is presented and a clinical trial of the substance on 56 pupils with an IQ range from 65 to 110 is described. Subjects all reported subjective physical well-being between the fourth and the sixteenth week of medication. Teachers observed that medicated pupils became less shy, and subjective reports indicate improved attentiveness, increased comprehension, memory and learning concentration. Fifty children showed increases in IQ ranging from 3 to 50. Beneficial effects of the medication were confirmed not only by the teachers and pupils but also by the parents. 9 references. (Author abstract modified)

000886 Shekim, Walid O.; Dekirmenjian, Harutoune; Chapel, James L. Section of Child Psychiatry, Department of Psychiatry, University of Missouri College of Medicine, Columbia, MO 65201 **Urinary MHPG excretion in the hyperactive child syndrome and the effects of dextroamphetamine.** Psychopharmacology Bulletin. 14(2):42-44, 1978.

The correlation between the presence of hyperactivity in the natural fathers of hyperactive children with urinary 3-methoxy-4-hydroxyphenylglycol (MHPG) excretion of their children as examined when the children were in a drug-free state and during amphetamine intake. Results suggest that there is a connection between central nervous system norepinephrine (NE) metabolism and hyperactivity. Dextroamphetamine decreases NE cell activity and NE turnover. Hyperactive children fall into two groups that can be identified biochemically: 1) a genetically determined group that has normal to high urinary excretion of MHPG, probably secondary to high NE content activity; and 2) a group that has a low excretion of MHPG, probably secondary to damage to NE axons or terminals in either the medial forebrain bundle or neocortex. 8 references.

000887 Shouse, Margaret N.; Lubar, Joel F. Department of Anatomy, School of Medicine, University of California at Los Angeles, Los Angeles, CA 90024 **Physiological basis of hyperkinesis treated with methylphenidate.** Pediatrics. 62(3):343-351, 1978.

The contribution of general physiological arousal and motor activation levels to treatment outcomes in hyperkinetic subjects with the use of methylphenidate was investigated and compared to unmedicated controls. Baseline physiological measures of arousal and motor activation were obtained for 12 hyperkinetic children; they were then correlated with the magnitude of medical and behavioral problems in each subject and the degree of remission following methylphenidate administration. Although physiological measures failed to distinguish hyperkinetic children in general, four children consistently revealed hypoarousal physiological patterns relative to other hyperkinetic and normal control children. A trend toward normalization of all physiological measures with medication is consistent with the arousal hypothesis. Initial sensori-motor rhythm incidence alone accurately predicted the severity of pretreatment motor symptoms

and individual response to medication, suggesting a basis for these findings in motor functions. 22 references. (Author abstract modified)

000888 Silva, Penildon; de Castro Meira, Romulo Luiz; de Araujo Goes, Valcelia Marques; Spinola, Paulo Galvao; de Noronha Fontana, Rose Maria. Instituto de Ciencias da Saude, Universidade Federal de Bahia, Bahia, Brazil **/Use of piracetam-dihydroergotoxin association in old patients./** Uso da associacao piracetam e diidroergotoxina em pacientes geriactricos. Revista Brasileira de Medicina (Rio de Janeiro). 34(10):585-591, 1977.

A double-blind trial on the effects of an association of two drugs, piracetam and dihydroergotoxin, on the symptoms and signs of senile involution was conducted which utilized 67 geriatric patients (19 men and 48 women) who ranged from 60-103 years old. An evaluation scale was used and the following symptoms were considered: 1) irritability; 2) agitation; 3) motor hypoactivity; 4) reactions when hurried; 5) fatigue; 6) distraction; 7) meticulousness; 8) recent memory; 9) emotional incontinence; 10) impression of the general condition before and after therapy. The subjects were given six capsules daily which contained 400 mg piracetam and .66 mg metanosulfonate of dihydroergotoxin weekly for 9 weeks. The comparison of the placebo group to the active drug group indicates a significant superiority of the latter. In the placebo group the improvement reached 23.5% of the patients while in the active drug group the improvement reached 72.7% of them. No side-effects were observed with the use of this medicamental association. 47 references. (Journal abstract modified)

000889 Sitaram, N.; Weingartner, Herbert; Caine, Eric D.; Gillin, J. Christian. Biological Psychiatry Branch, National Institute of Mental Health, Bethesda, MD 20014 **Choline: selective enhancement of serial learning and encoding of low imagery words in man.** Life Sciences. 22(17)1555:1560, 1978.

The effect of a single oral dose of choline chloride on two kinds of memory measures (serial learning and a selective reminding task) was studied in 10 normal volunteers. Choline decreased significantly the number of trials required to master a serial learning word test. On the selective reminding task only the recall of poorly imageable words that are ordinarily difficult to remember was enhanced by choline. Words which were highly imageable and ordinarily easy to remember were unaffected. The degree of enhancement with choline correlated inversely with performance of subjects on placebo. The data indicate that brain acetylcholine may play a facilitatory role in encoding and storage of specific information items in man. 16 references. (Author abstract modified)

000890 Sitaram, N.; Weingartner, Herbert; Gillin, J. Christian. Biological Psychiatry Branch, NIMH, Bethesda, MD 20014 **Human serial learning: enhancement with arecholine and choline and impairment with scopolamine.** Science. 201(4352):274-276, 1978.

The effects of arecholine, choline, and scopolamine on serial learning in human subjects were investigated. It was found that arecholine (4mg), a cholinergic agonist, and choline (10g), a precursor of acetylcholine, significantly enhanced serial learning. Subjects received methscopolamine prior to both arecholine and placebo injections. Conversely, it was found that scopolamine (0.5mg) a cholinergic antagonist, impaired learning and this impairment was reversed by a subsequent injection of arecholine. Results show that the degree of enhancement produced by arecholine and choline and the impairment after scopolamine were inversely proportional to the subject's performance on placebo; poor performers were more vulnerable to both the enhancing effect of the cholinergic agonist and precursor and the impairment after the cholinergic antagonist than good performers. 22 references. (Author abstract)

000891 Tinklenberg, Jared R.; Darley, Charles F.; Roth, Walton T.; Pfefferbaum, Adolf; Kopell, Bert S. Psychiatry Service 116A3, VA Hospital, 3801 Miranda Avenue, Palo Alto, CA 94304 **Marihuana effects on associations to novel stimuli.** Journal of Nervous and Mental Disease. 166(5):362-364, 1978.

Sixteen college educated males performed an object description task during placebo conditions and after eating cookies containing 0.3mg/kg delta9-tetrahydrocannabinol. The task was scored for fluency, flexibility, elaboration, and uniqueness, all of which represent associational thinking and are considered to be components of creativity. Marihuana cookies did not enhance any of these measures. Results do not support the hypothesis that marihuana increases associational or creative thinking on a task that explicitly requests unusual verbal responses. 7 references. (Author abstract modified)

000892 Vuchinich, Rudy E.; Sobell, Mark B. Department of Psychology, Vanderbilt University, Nashville, TN 37240 **Empirical separation of physiologic and expected effects of alcohol on complex perceptual motor performance.** Psychopharmacology (Berlin). 60(1):81-85, 1978.

The role of expectancy in producing perceptual motor performance deficits following alcohol consumption was investigated in 40 normal male drinkers. Half the Ss were given 0.414g/kg ethanol and half were given no ethanol; half the subjects in each group were told they were drinking alcohol and half were not so instructed. Performance on a divided attention task requiring simultaneous pursuit rotor tracking and choice reaction time were the main dependent measures. Alcohol disrupted tracking performance and interacted with instructions regarding beverage content to influence choice reaction time performance. Results indicate that divided attention task performance is influenced by a low alcohol dose and by Ss' expectancies. These findings demonstrate the importance of controlling for expectancy effects in alcohol research and suggest that alcohol and expectancy may influence perceptual motor performance through different mechanisms. 21 references. (Author abstract modified)

000893 Watts, Geoff. New Medical Journals, Ltd., Clareville House, 26-27 Oxendon Street, London SW1Y 4EL England **Molecule a la mode.** World Medicine (London). 13(14):35-36, 1978.

The use of beta-endorphin by psychiatrists Nathan Kline and Heinz Lehmann to induce changes in schizophrenic and depressed patients is discussed. Experimentation rather than research with 15 patients and one normal subject was an attempt to do something with patients for whom drug therapy had failed. After intravenous injections, the patient's mood and behavior were monitored and compared with previously obtained placebo effects. Progressive reduction or disappearance of schizophrenic symptoms and mood change in depressed patients was observed. Distinctions between immediate and delayed influences of the drug are made. Speculation about the mechanism of action of this drug, which is expensive to synthesize, and criticisms of the way the experimentation was conducted are included. A basic question raised by these preliminary findings is how the same substance can produce therapeutic results in patients with different diagnoses.

000894 Webb, Suzanne S.; Smith, Gene M.; Evans, Wayne O.; Webb, N. Conant. University of Rochester Medical School, Rochester, NY 14627 **Toward the development of a potent, nonsedating, oral analgesic.** Psychopharmacology (Berlin). 60(1):25-28, 1978.

The separate and combined analgesic effects of 10mg of oral amphetamine sulfate and 25mg oral anileridine dihydrochloride were studied in 24 healthy, adult male volunteers. Tolerance of progressively increasing pain produced by the Submaximum Effort Tourniquet Technique was tested after amphetamine, after anileridine, after the combination, and after placebo. Treatments were administered double-blind and in counterbalanced order. Elapsed time to report of slight, moderately distressing, very distressing, and unbearable pain was recorded for each trial. The four oral treatments differed significantly for very distressing and for unbearable pain. At each of the three upper pain levels, the mean tolerance times for anileridine and amphetamine were similar (longer than placebo but shorter than the combination). The effect of the combination was approximately the sum of the effects of the two components. 23 references. (Author abstract modified)

15 TOXICOLOGY AND SIDE EFFECTS

000895 Agrawal, Prema. Department of Psychiatry, St. Francis Hospital, Poughkeepsie, NY **Diazepam addiction: a case report.** Canadian Psychiatric Association Journal (Ottawa). 23(1):35-37, 1978.

A case of addiction to Diazepam is reported. Severe withdrawal symptoms such as tremulousness, irritability, increased psychomotor activity, generalized muscle cramps, abdominal cramps, photophobia, retro-orbital pains and insomnia are described. Visual hallucinations, illusions, and paranoid features are also present in this case. Detoxification and management were accomplished by gradual withdrawal and the addition of another tranquilizer, anticonvulsant, and muscle relaxant. Other reports of abuse and addiction in the literature are reviewed. Wide recognition of the addictive properties of Diazepam is necessary, and restrictions on its indiscriminate prescription by physicians is called for. 15 references.

000896 Ananth, Jambur. Allan Memorial Institute, 1025 Pine Avenue West, Montreal, Quebec, Canada H3A 1A1 **Side effects in the neonate from psychotropic agents excreted through breast-feeding.** American Journal of Psychiatry. 135(7):801-805, 1978.

The side effects resulting from breast-feeding of the infant by mothers consuming psychotropic drugs are reviewed and possible preventive measures are discussed. The following categories of drugs are reviewed: sedatives and analgesics, anxiolytic sedatives, antidepressants, and neuroleptics. Because of the danger to the neonate, it is concluded that drugs such as diazepam, lithium, bromides, reserpine, and opium alkaloids should not be given to lactating women; and barbiturates, haloperidol, and penfluridol should be administered with caution. The importance of monitoring the infant carefully is emphasized if the mother is taking certain drugs known to produce side-effects in the neonate. 48 references.

000897 Anderson, Bruce N.; Henrikson, I. R. 120 N. Oak Street, Hinsdale, IL 60521 **Jaundice and eosinophilia associated with amitriptyline.** Journal of Clinical Psychiatry. 39(9):730-731, 1978.

A case study where eosinophilia and jaundice occurred in a depressed patient treated with amitriptyline is discussed. Eosinophilia has not been previously reported as a complication of treatment with amitriptyline. Eosinophilia occurred after 16 days of treatment and was followed by a pruritic rash and jaundice. These complications cleared upon withdrawal of the drug. It is recommended that eosinophilia be added to the known hepatic complications of amitriptyline. 6 references. (Author abstract modified)

000898 Aschenbrenner, K. Michael; Kasubek, Wolfgang. Sonderforschungsbereich 24, Universitat Mannheim, L 13, 15-17, D-6800 Mannheim 1, Germany **Challenging the Cushing Syndrome: multiattribute evaluation of cortisone drugs.** Organizational Behavior and Human Performance. 22(2):216-234, 1978.

The applicability of multiattribute theory to the improvement of medical therapy decisions is demonstrated. Certain illnesses, such as primary chronic polyarthritis or asthma bronchiale, call for a long-lasting therapy with cortisone. Such therapy might, however, result in serious side-effects. Several alternative chemical derivatives of cortisone cause these side-effects with differing severity and frequency. The problem is to decide which expected side-effect combination is the least evil. For this purpose, five experienced physicians estimated dangerousness functions and importance weights for the six side-effects which were used as attributes. Two multiattribute utility procedures were applied, an indifference curve method and a conditional importance rating procedure. The results were used to evaluate the seven most commonly used cortisone drugs. Comparison of these multiattribute evaluations with intuitive holistic evaluations of the drugs show that the physicians' multiattribute judgments agreed nearly perfectly and much more than their global evaluations of the alternatives. Further, among the multiattribute methods the simpler rating procedure yielded the more reliable results. 18 references. (Author abstract modified)

000899 Ban, Thomas A. Vanderbilt University, Tennessee Neuropsychiatric Institute, 1501 Murfreesboro Rd., Nashville, TN 37217 **Drug interactions in psychiatry.** International Pharmacopsychiatry (Basel). 13(2):94-99, 1978.

Some of the more common drug interactions between psychotherapeutic and nonpsychotherapeutic agents are discussed. Since maintenance therapy with neuroleptics, lithium, and tricyclic antidepressants may extend over long periods of time, drug interactions between these agents have important clinical significance. Among the most common and first adverse effects seen with neuroleptics is hypertension often followed by depression. There is evidence that there is a relationship between the serum level and the therapeutic action of tricyclic antidepressant drugs. There is substantial documentation for the relationship between the serum level and both the toxic and therapeutic effects of lithium salts. It is noted that both alcohol and sedative barbituates present special problems in pharmacotherapy. 12 references. (Author abstract modified)

000900 Diehl, Lothar Walter; (Schulze-Buelow, I. C., translator). Freie Universitat, Berlin, Germany **Treatment of complicated epilepsies in adults: a clinical-statistical study.** Basel, S. Karger, 1978. 136 p.

Background information concerning psychopathological syndromes in epilepsies during antiepileptic treatment is presented and a study in which 67 patients with complicated epilepsies were monitored for psychological difficulties in conjunction with their medication dosage is described. The possibility of finding an optimal dosage by controlling the serum concentration was investigated. Results indicate that long-term outpatient therapy can be accomplished practically without side-effects over years, even in complicated epilepsies. Results are recommended as relevant not only for therapy optimization, but also for the solution of methodological and conceptual psychiatric problems. 250 references.

000901 Dielehner, Stanislaw; Wolna-Dielehner, Wanda; Kosiorowski, Zbigniew; Ploucha, Kazimierz. ul. Strzelecka 5/1, 44-180 Toszek, Poland /**Nikolau's syndrome following injection of chlorpromazine.**/ Zespol Nikolau'a po wstrzyknieciu chloropromazyny. Psychiatria Polska (Gdansk). 12(2):281-284, 1978.

Nikolau's syndrome of arterial blockage occurred in a 57-year-old schizophrenic patient receiving her evening injection of chlorpromazine. Since neither hematuria nor deterioration of the vertebral marrow was noted, a connection between Nikolau's syndrome and intensification of urinary incontinence could be established. Although the course of this syndrome is favorable, it exposes the patient to further suffering, so subsequent intramuscular injections of chlorpromazine were halted. 10 references.

000902 Endo, Midori; Hirai, Ko; Ohara, Mitsugi. Department of Neuropsychiatry, Aichi Medical College, Nagakute, Aichi, 480-11, Japan **Paranoid-hallucinatory state induced in a depressive patient by methyldopa: a case report.** Psychoneuroendocrinology (Oxford). 3(2):211-215, 1978.

A paranoid hallucinatory state induced in a depressive patient by methyldopa is described. The 69-year-old housewife presented with insomnia, anxiety, agitation, depression, palpitation, and tachycardia. Amitriptyline (30-55mg/day) and pentobarbital (50-100mg/day) were administered upon admission, and small amounts (0.75-2.25mg/day) of haloperidol and bromovalerylurea (300mg/day) were added later. Since the patient's blood pressure tended to rise after the commencement of haloperidol, methyldopa (750mg/day) was begun 25 days after admission. The patient's blood pressure decreased within 4 days, but she said she felt she was going mad. Parkinsonian-like tremors appeared on the 8th day of medication. The patient expressed paranoid ideas on the 11th day, and then began to experience visual and auditory hallucinations. Methyldopa was discontinued, and 48 hours later she was free of illusions, hallucinations, and tremors. Substitution of 10mg oxypertine daily for haloperidol improved her mood activity gradually, and the patient was discharged after 2.5months of hospitalization. 15 references.

000903 Freed, Jeffrey S.; Kaynan, Arieh; Szuchmacher, Pinkus, H. 86-35 Queens Blvd., Elmhurst, Long Island, NY 11373 **Dopamine and the aged.** Journal of the American Geriatrics Society. 26(11):524-525, 1978.

Dopamine therapy in the aged is discussed. The physician who treats patients of the geriatric age group is cautioned about the peculiar response of these patients to the discontinuance of dopamine. Even with adequate rehydration, further volume loading may be necessary before administration can be stopped to avert renal failure, and the dosage of dopamine must be decreased gradually until withdrawal is complete. Illustrative case reports are offered. Regardless of the age of the patient, however, dopamine is recommended as a valuable agent for treating shock associated with an abdominal catastrophe when these precautions are followed. 2 references. (Author abstract modified)

000904 Gardos, George; Cole, Jonathan O. Institute for Rehabilitation and Research, Boston State Hospital, Boston, MA **Pilot study of cyproheptadine (Periactin) in tardive dyskinesia.** Psychopharmacology Bullein. 14(2):18-20, 1978.

A pilot study of cyproheptadine (Periactin) in treatment of tardive dyskinesia is described. Subjects were five patients with obvious tardive dyskinesia symptoms. Cyproheptadine was administered in a fixed dose of 4mg b.i.d. added to the regular medication. Duration of treatment was 6 weeks. Tardive dyskinesia was rated on the Simpson tardive dyskinesia rating scale and abnormal involuntary movement scale, twice weekly during drug administration and 4 weeks before and 4 weeks after drug treatment. Results indicate that cyproheptadine did not produce any striking improvement to tardive dyskinesia. Spontaneous fluctuations over time appeared to override drug-induced changes. Improvement in tremor of lip and tongue with simultaneous worsening of choreo athetoid movements was observed in one of the patients. This suggests a possible antiparkinson-like effect of the drug. 2 references.

000905 Gibson, Alan C. St. Ann's Hospital, Canford Cliffs, Poole, Dorset, England **Depot injections and tardive dyskinesia.** British Journal of Psychiatry (London). 133(October):361-365, 1978.

A prospective study of 374 outpatients receiving depot fluphenazine or depot flupenthixol to determine the incidence of tardive dyskinesia is described. In 3 years, the percentage showing the bucco-linguo-masticatory syndrome rose from 8% to 22%, though patients had received various neuroleptics for a mean of 13 years previously. Fluphenazine and flupenthixol were equally involved, though 75% of affected patients had the condition in mild degree. Reduction of dose or the substitution of pimozide produced marked inprovement, but results suggest that it is unlikely that this will be permanent. 27 references. (Author abstract modified)

000906 Greenblatt, David J.; Gross, Peter L.; Harris, Jeffrey; Shader, Richard I.; Ciraulo, Domenic A. Clinical Pharmacology Unit, Massachusetts General Hospital, Boston, MA **Fatal hyperthermia following haloperidol therapy of sedative-hypnotic withdrawal.** Journal of Clinical Psychiatry. 39(8):673-675, 1978.

The role of haloperidol, a butyrophenone derivative, in a case of catastrophic hyperpyrexia following sedative hypnotic withdrawal therapy was examined. A case study of a 30-year-old male, with a history of methaqualone and barbiturate abuse, was given. It was reported that shortly following high doses of parenteral haloperidol administered for treatment of the withdrawal syndrome, the patient developed severe hyperthermia, with body temperatures reaching as high as 108 degrees F. The hyperthermic episode was followed by cardiovascular collapse, multiple complications, and death. The sequence of events strongly suggests that haloperidol therapy was causally related to the development of fatal hyperthermia. It is concluded that butyrophenone haloperidol, like the phenothiazine derivatives, can produce clinically important impairment of thermoregulation. 25 references. (Author abstract modified)

000907 Guynn, Robert W.; Faillace, Louis A. Department of Psychiatry, University of Texas Medical School at Houston, Houston, TX 77030 **Organic fluorides: implications for psychiatry.** Journal of Clinical Psychiatry. 39(6):523, 527-531, 1978.

A review of the biochemistry and toxicology of organic fluorides is presented with particular emphasis on implications for the field of psychiatry. The widespread use of synthetic organic fluorides has recently received attention as a potential health hazard. A number of organic fluorides have become important drugs in psychiatry. These include the neuroleptics trifluoperazine, fluphenazine, triflupromazine, and haloperidol, the benzodiazepine flurazepam and the polyfluorinated inhalant convulsant indoklon. The deliberate inhalation of fluorocarbon aerosol propellants as a form of drug abuse among youth is also discussed. It is suggested that except for direct membrane effects producing cardiac arrhythmias or convulsion, some degree of biodegradation of the fluorinated compound seems to be necessary to produce toxic effects. A greater awareness of the potential problems associated with organic fluorides is recommended to increase clinical identification of problems that previously went unrecognized. 79 references. (Author abstract modified)

000908 Haram, Kjell; Bakke, Olav M.; Johannessen, Kristina H.; Lund, Tjostolv. Department of Obstetrics and Gynecology, University of Bergen, Bergen, Norway **Transplacental passage of diazepam during labor: influence of uterine contractions.** Clinical Pharmacology and Therapeutics. 24(5):590-599, 1978.

The rate of transplacental passage of diazepam (DZ) was studied in 33 cases of cephalic presentation where operative forceps delivery was indicated by intrauterine hypoxia or by prolonged second stage of labor. DZ (30mg intravenously) was injected immediately before delivery either during uterine contractions or in the relaxation period. As judged by the concentration in the newborn and the mother-infant concentration ratio at 2 hours after delivery and on the second postnatal day, fetal exposure to the drug was less when the injection was timed to coincide with uterine contractions. In patients given the drug during the relaxation period, the injection/delivery (I/D) interval was up to 305 seconds, and the 2-hour mother-infant concentration ratio was close to unity in some cases. It appears that transplacental passage of DZ is rapid when the high initial concentrations in the maternal circulation coincide with favorable conditions for transfer in the relaxation period. Although sleep was induced by DZ in all of the mothers, the amounts of drug transferred during the short I/D intervals did not exert deleterious effects on the newborn infants. 23 references. (Author abstract modified)

000909 Hopewell, Clifford Alan. North Texas State University **Prediction of extrapyramidal effects of neuroleptic therapy using visuomotor tasks. (Ph.D. dissertation).** Dissertation Abstracts International. 39(3):1482-B, 1978. Ann Arbor, Univ. M-films No. 7816721. 75 p., 1978.

An attempt was made to predict the serious side-effects of akathisia and parkinsonism based on individualized measurements of changes in visuomotor functioning. It was hypothesized that deterioration in this functioning will predict which patients undergoing neuroleptic drug therapy will experience the two extrapyramidal symptoms and which patients will not. Measures of visuomotor ability included Haase and Janssen's Handwriting Test and the Bender-Gestalt. A group of 45 patients undergoing neuroleptic therapy was studied. It was not possible to predict the symptom group based on Handwriting Test scores, although they did show clear deterioration of performance among Ss who experienced parkinsonian reactions as opposed to those who experienced akathisia or had no extrapyramidal symptoms at all. Similar analyses reveal the same results on the Bender-Gestalt. Multivariate analyses indicate both a significant difference between the symptom groups and a significant group diagnosis interaction for Bender-Gestalt scores. No significant trends were evident on Handwriting Test scores. (Journal abstract modified)

000910 Kane, John; Wegner, James; Struve, F. Department of Psychiatry, Long Island Jewish-Hillside Medical Center, Glen Oaks, NY **The mitten pattern as a potential EEG predictor of tardive dyskinesia.** Psychopharmacology Bulletin. 14(2);35-36, 1978.

The mitten pattern as a potential EEG predictor of tardive dyskinesia was studied. Subjects were 38 patients who developed tardive dyskinesia following administration of neuroleptics and a group of 19 patients receiving neuroleptics, without any signs of tardive dyskinesia. EEG abnormalities of any type were present in 79% of tardive dyskinesia patients and 35% of controls. However, this difference was largely due to the mitten pattern in the tardive dyskinesia group. If mittens were considered normal, the percentage of abnormalities in the tardive dyskinesia group fell to 38 and that of the control to 20. No significant differences were observed when the two groups were compared on the following variables: age, sex, diagnosis, duration of exposure to neuroleptics, and maximum dose received in chlorpromazine equivalents. Findings suggest that mitten pattern may identify patients at high risk for development of tardive dyskinesia. 10 references.

000911 Kantor, Shepard J.; Glassman, Alexander H.; Bigger, J. Thomas, Jr.; Perel, James M.; Giardina, Elsa V. 722 West 168th Street, New York, NY 10032 **The cardiac effects of therapeutic plasma concentrations of imipramine.** American Journal of Psychiatry. 35(5):534-538, 1978.

The effects of imipramine hydrochloride at plasma concentrations associated with antidepressant activity in seven patients hospitalized for severe depressive illness were examined. The drug usually produced prolongation of intraventricular cardiac conduction. Although this was generally well tolerated, it is suggested that patients with preexisting conduction system disease may be at increased risk when taking tricyclic antidepressants. The orthostatic hypotension seen in all seven patients represents a potentially serious problem with tricyclic antidepressants. The antiarrhythmic properties associated with imipramine and significant interactions between imipramine and drugs taken by patients with cardiovascular disease are discussed. 20 references. (Author abstract modified)

000912 Kiejna, Andrzej; Krakiewicz, Adam. Klinika Psychiatryczna AM, ul. Kraszewskiego 25, 50-229 Wroclaw, Poland / **Mental disorders in the course of treatment with procaine penicillin (Hoigne's syndrome).**/ Zaburzenia psychiczne w przebiegu leczenia penicylina prokainowa (zespol Hoigne'a). Psychiatria Polska (Gdansk). 12(2):277-280, 1978.

The occurrence of transient mental disturbances in a 33-year-old patient following intramuscular administration of procaine penicillin is described. The disorders could be classified as Bonhoeffer's acute exogenous type of reaction, but an embolic mechanism probably was responsible. The fact that Hoigne's syndrome was observed serveral times supports the hypothesis that psychopathological (psychotic and neurotic) complexes of varying etiology can be predisposing factors. 9 references.

000913 Kolodny, Robert C. Reproductive Biology Research Foundation, 4910 Forest Park Boulevard, St. Louis, MO 63108 **Effects of alpha-methyldopa on male sexual function.** Sexuality and Disability. 1(3):223-228, 1978.

To determine the frequency and possible mechanism whereby alpha-methyldopa causes disturbances in male sexuality, 105 hypertensive men using this drug were interviewed, and serum testosterone was measured in 36 Ss with diminished sexual functioning and in a subgroup of 30 Ss with no such alterations. The occurrence of impotence in 28 Ss was dose dependent. Serum testosterone concentrations in men using the drug who had impotence, depressed libido, and normal potency were similar to healthy adult nonhypertensive males of the same age. Health care professionals should query all hypertensive patients about sexual symptoms before and during drug therapy, since these are a common potential cause of noncompliance. 15 references. (Author abstract modified)

000914 Kremberg, M. Roy St. Luke's Hospital, New York, NY **Sudden death of a patient taking phenothiazine.** Psychiatric Annals. 8(7):90-91,95, 1978.

A case history of a patient who had been treated with escalating doses of phenothiazine is presented. The patient was admitted to a hospital with symptoms of depression and psychoses. Her attending psychiatrist began pharmacotherapy with trifluoperazine, thioridazine, and chlorpromazine. After 9 days of steady physical deterioration, the patient died. It is noted that the role phenothiazines play in the cause of sudden death remains to be clarified. However, preventive measures that can be employed to minimize such fatalities are suggested. They include antiembolic stockings, daily checks for calf tenderness, and steps to ensure that the patient remains mobile. The importance of postmortem examinations in the continuing search to

find relationships between cause of death and administration of the phenothiazine class of drugs is emphasized. 11 references.

000915 Lhermitte, Francois; Agid, Yves; Signoret, Jean-Louis. Department of Neurology and Neuropsychology, Hopital de la Salpetriere, 47 Blvd. de l'Hopital, F-75634 Paris Cedex 13, France **Onset and end-of-dose levodopa-induced dyskinesias: possible treatment by increasing the daily doses of levodopa.** Archives of Neurology. 35(5):261-263, 1978.

Ballistic and dystonic involuntary movements occurring at the beginning and end of the period of levodopa efficacy are described in nine patients exhibiting dyskinesias during long-term levodopa therapy. The abnormal involuntary movements occurred approximately 13 months after the first administration of levodopa for the treatment of Parkinson's disease. In contrast to classical abnormal interdose dyskinesias, the biphasic dyskinesias were alleviated by increasing and fractionating the daily doses of levodopa. 8 references. (Author abstract modified)

000916 Matsuyama, Steven S.; Charuvastra, V. Charles; Jarvik, Lissy F.; Fu, Tsu-Ker; Sanders, Kayelene; Yen, Fu-Sun. Psychogenetics Unit, VA Hospital Brentwood 530/151E, Wilshire and Sawtelle Boulevards, Los Angeles, CA 90073 **Chromosomes in patients receiving methadone and methadyl acetate.** Archives of General Psychiatry. 35(8):989-991, 1978.

Chromosomes of peripheral leukocytes were examined in 28 addicts participating in a Veterans Administration Special Action Office for Drug Abuse Prevention cooperative study of methadyl acetate as compared to methadone. Blood samples for 72-hour leukocyte cultures were drawn after nearly 40 weeks of maintenance therapy while subjects were receiving active medication. For comparison, 10 nondrug users were also studied. The frequency of chromosome damage was not greater in subjects maintained on methadyl acetate or methadone than in nondrug users. 19 references. (Author abstract modified)

000917 Meyer, R. E. Department of Psychiatry, University of Connecticut, School of Medicine, Farmington, CT 06032 **Psychoses and other adverse psychiatric reactions associated with marihuana.** In: Deniker, P., Neuropsychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1249-1261).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, psychoses and other adverse psychiatric reactions associated with marihuana were discussed. Two types of acute reactions to marihuana have been reported, toxic and panic reactions. Toxic reactions are dose related and are believed to be more common in the Near and Far East than in North America. Panic reactions consist of overwhelming anxiety and fear of loss of control and may be related to the user's personality and setting. Flashbacks secondary to marihuana use have been described, but some observers attribute flashbacks to the associated use of hallucinogens in marihuana users. Cannabis psychosis has also been reported in the Eastern literature, but this disorder has not been associated with North American patterns of use. A public health evaluation program was proposed to clarify the psychiatric risks of cannabis consumption. 69 references. (Author abstract modified)

000918 Muller, Pavel; Seeman, Philip. Department of Pharmacology, Faculty of Medicine, University of Toronto, Toronto, Canada M5S 1A8 **Dopaminergic supersensitivity after neuroleptics: time-course and specificity.** Psychopharmacology (Berlin). 60(1):1-11, 1978.

The apparent discrepancy in time course between the onset of dopaminergic supersensitivity in experimental animals (days or weeks) and the onset of the clinical syndrome of tardive dyskinesia (months or years) is discussed. It is suggested that subclinical or latent tardive dyskinesia is fully compensated in most patients taking neuroleptics, whereas dopaminergic supersensitivity may be decompensated in patients with full blown tardive dyskinesia. Dopaminergic supersensitivity persists for a period proportional to the length of neuroleptic treatment. If this relationship holds for very long treatments, it may account for the persistence of tardive dyskinesia after years of neuroleptic therapy. 79 references. (Author abstract modified)

000919 Murphy, Ronald J. Human Sexuality Center, Long Island Jewish-Hillside Medical Center, New York, NY **Compliance dilemma: antihypertensives and sexual dysfuntion.** Behavioral Medicine. 5(10):10-12, 14, 1978.

Ways of dealing with problems in achieving erections or in ejaculating induced by antihypertensive medication are discussed. A partial impairment induced by medication may lead to a more extensive dysfunction due to psychological factors. It is suggested that physicians: avoid suggesting that antihypertensives cause sexual dysfunction; inquire about side-effects; refrain from using the word ""impotence"; be supportive and optimistic; deal with sexual dysfunction promptly; and, refer the patient to a sex counselor if necessary. It is concluded that it is important for the patient to obtain the kind of treatment that will enable him to function as a sexual person as well as bring his blood pressure down. 2 references.

000920 no author. 19(17):25-26, 1978. **Caffeine delirium: too many wake-up pills may cause it.** Medical World News.

A case of caffeine delirium caused by overexposure to caffeine in pills, coffee, and cola drinks is reported. Research results suggest that five 200milligram tablets of over-the-counter caffeine can bring about caffeine delirium. A patient developed tremor, impaired memory, vertigo, altered states of consciousness, and sensory disturbances after ingesting coffee, cola, and 400milligrams of tabloid caffeine in an effort to stay awake during an extended dogsled race. The symptoms abated after 6 hours and the man continued the race. Mental and blood tests were found to be normal after the race. It is concluded that the toxicity of caffeine should be considered.

000921 Pevnick, Jeffrey S.; Jasinski, Donald R.; Haertzen, Charles A. Missouri Institute of Psychiatry, St. Louis, MO **Abrupt withdrawal from therapeutically administered diazepam.** Archives of General Psychiatry. 35(8):995-998, 1978.

A case history is presented in which subjective, behavioral, and physiologic changes followed abrupt withdrawal of diazepam (Valium) in a patient who had been treated with 30 to 45 milligrams daily for 20 months. Precipitous weight loss and orthostatic pulse rate increase were a part of the abstinence syndrome, which occurred between the 5th and 9th days of withdrawal. Accompanying these changes in physiologic measures were discomforting symptoms and dysphoria that were aversive and reinforceing to drug taking since the patient sought diazepam administration. These observations suggest that changes in mood, feeling states, and behavior may be the most prominent characteristics of the abstinence syndrome associated with physical dependence on this dose level of diazepam. 8 references. (Author abstract modified)

000922 Piziak, Veronica K.; Sellman, James E.; Othmer, Ekkehard. Department of Psychiatry, University of Kansas Medical Center, Rainbow and 39th Street, Kansas City, KS 66103 **Lithium and hypothyroidism.** Journal of Clinical Psychiatry. 39(9):709-711, 1978.

A survey of 70 clinicians, a chart review of 2,590 patients, and a review of the pathophysiology of lithium-induced hypothyroidism were conducted to determine the incidence of lithium-

related hypothyroidism and to develop practical monitoring techniques for patients treated with lithium. A 1-2% frequency of hypothyroidism was found among subjects, suggesting that lithium-related hypothyroidism was not a common problem. Measurement of thyroid stimulating hormone was found to be the earliest and most sensitive indication of thyroid dysfunction resulting from lithium administration. 7 references. (Author abstract modified)

000923 Raeder, E. A.; Burckhardt, D.; Neubauer, H.; Walter, R.; Gastpar, M. Division of Cardiology, University Hospital, CH-4031 Basel, Switzerland **Long-term tri- and tetra-cyclic antidepressants, myocardial contractility, and cardiac rhythm.** British Medical Journal (London). No. 6138:666-667, 1978.

The influence of tricyclic and tetracyclic antidepressants (TCA) on cardiac rhythm and myocardial contractility after prolonged administration was investigated. The following antidepressants were used alone or in combination: maprotiline, amitriptyline, trimiprimine, imipramine, desipramine, and clomipramine. In 18 patients, 8-hour daytime Holter monitoring was performed during treatment. While the data do not prove the existence of an antiarrhythmic effect, it is concluded that TCA in therapeutic doses has no arrhythmogenic action. 5 references. (Author abstract modified)

000924 Rinne, U. K.; Marttila, R. Department of Neurology, University of Turku, SF-20520 Turku 52, Finland **Brain dopamine receptor stimulation and the relief of parkinsonism: relationship between bromocriptine and levodopa.** Annals of Neurology. 4(3):263-267, 1978.

The relationship between brain dopamine receptor stimulation by bromocriptine or levodopa and the relief of parkinsonism was studied in 24 patients with Parkinson's disease. Bromocriptine (30mg daily for 20 weeks) elicited an improvement in the parkinsonian clinical features, but this improvement was not as great as that seen after subsequent treatment with levodopa and benserazide (800mg and 200mg daily, respectively). The pretreatment severity of the disease and changes in cerebrospinal fluid (CSF) homovanillic acid (HVA) levels were negatively correlated with improvement in parkinsonian disability during bromocriptine treatment. Clinical improvement and HVA responses in the CSF after dopamine receptor stimulation by bromocriptine may predict the clinical response to levodopa. 22 references. (Author abstract modified)

000925 Sandifer, Myron G. Department of Psychiatry, University of Kentucky Medical Center, Lexington, KY 40506 **The hypertensive psychiatric patient: pharmacologic problems.** Journal of Clinical Psychiatry. 39(9):700-702, 1978.

Psychiatric symptoms secondary to antihypertensive drugs and the adverse drug interactions between antihypertensive and psychotropic drugs are described. Hypertensive drugs are divided into diuretics, vasodilators, and beta blockers. The problems created by the combination of lithium and diuretics, and the use of reserpine, methyldopa, guanethidine, and clonidine in the treatment of hypertension are discussed. It is suggested that propanolol and hydralazine may be used as second antihypertensive drugs that do not create these complex therapeutic problems in the treatment of the hypertensive psychiatric patient. 32 references. (Author abstract modified)

000926 Schatzberg, Alan F.; Cole, Jonathan O.; Blumer, Dietrich P. McLean Hospital, 115 Mill St., Belmont, MA 02178 **Speech blockage: a tricyclic side effect.** American Journal of Psychiatry. 135(5):600-601, 1978.

Five patients who developed speech blockage when they were treated with tricyclic antidepressants are described. The speech blockage may be described as a delay in thinking and speech in which the patient had difficulty conceiving or transferring the next logical thought into words. In all cases symptoms had not been present before treatment with the tricyclic and disappeared within 4 days of a decrease in tricyclic dosage. One case report is provided to illustrate the phenomenon. It is suggested that the speech blockage was caused by a tricyclic exerted central anticholinergic effect on higher cortical functions. 10 references.

000927 Stern, Gerald; Lees, Andrew. University College Hospital, London, England **The on-off effect -- a side-effect of long-term levodopa treatment.** Nursing Mirror (London). 147(7):17-18, 1978.

A side-effect of long-term levodopa treatment of Parkinson's disease is described. After one or two years of levodopa treatment, the beneficial effects of the drug begin to decrease. Increased drug-induced involuntary movements may be accompanied by the on/off effect, in which the patient experiences dramatic and abrupt alternations between nearly full mobility and complete akinesia. This condition affects 50% of the patients who have had five years of continuous maximum dose levodopa treatment. The disabling episodes, during which many pretreatment symptoms may reappear, can last up to several hours.

000928 Swartz, Conrad. Department of Psychiatry, University of Iowa Hospitals and Clinics, Iowa City, IA 52242 **Lupus-like reaction to phenelzine.** Journal of the American Medical Association. 239(25): 2693, 1978.

A case of adverse reaction to phenelzine treatment for depression is reported. Known possible side-effects of phenelzine sulfate are enumerated. The case described involves phenelzine-induced systemic lupus erythematosus (SLE). After 8 months of phenelzine therapy the patient presented with symptoms of SLE and was positively diagnosed. Upon discontinuation of phenelzine, the condition gradually disappeared but the depression returned. Drug-induced SLE is described as common with other hydrazine monoamine oxidase inhibitors. It is asserted that patients who have been treated with phenelzine sulfate for more than a few months should be tested for the presence of SLE. 7 references.

000929 Teychenne, P. F.; Pfeiffer, R. F.; Bern, S. M.; McInturff, D.; Calne, D. B. Experimental Therapeutic Branch, NINCDS, National Institutes of Health, Bethesda, MD 20014 **Comparison between lergotrile and bromocriptine in parkinsonism.** Annals of Neurology. 4(3):319-324, 1978.

The therapeutic and adverse effects of two ergot derivatives, bromocriptine and lergotrile, were compared in idiopathic parkinsonism. At both low (50mg daily) and high (150mg daily) dosages there was a similar but not identical profile of response. Initially, lergotrile tended to induce more severe but always transient hypotension. At higher doses, bromocriptine caused more dyskinesia. Neurological deficits improved with increasing doses up to an average daily level of 80mg to 150mg of ergot derivatives combined with levodopa, 450mg to 1,150mg, and carbidopa, 45mg to 115mg. However, efficacy often declined at the highest doses of antiparkinsonian agents. Adverse effects caused by ergot derivatives are more common with dosages greater than 100mg per day. In general, the best overall therapeutic results with bromocriptine and lergotrile were obtained in the dose range of 50mg to 100mg daily for each. It is concluded that bromocriptine and lergotrile are similar in their therapeutic properties and that both are comparable in efficacy to levodopa plus carbidopa (though optimal results are commonly obtained by combining submaximal doses of levodopa with ergot derivatives. The role for each drug in the treatment

of parkinsonism is likely to be determined by factors such as cost (bromocriptine) and hepatotoxicity (lergotrile). 27 references. (Author abstract)

000930 Vanecek, J.; Vinar, O.; Fink, Z. Adverse Drug Reactions Committee, Prague 10, Czechoslovakia **Adverse reactions to neuroleptic drugs.** Activitas Nervosa Superior (Praha). 20(1):50-51, 1978.

In a paper read at the 19th Annual Psychopharmacological Meeting, held in Jesenik, Czechoslovakia during January 1977, a report on the incidence of main adverse reactions to some neuroleptics from the international data bank according to a system/organ classification is discussed. Adverse reaction data for the following drugs are presented: aliphatic phenothiazines, piperidine phenothiazines, thioxanthenes, and butyrophenones. Adverse reactions occur in the skin, central and peripheral nervous system, liver, cardiovascular system, and blood (or bone marrow). Other side-effects include sleep and behavior disorders. It is concluded that monitoring of adverse reactions can predict therapeutic risk in psychotropic pharmacology, and may serve as a guide for tailoring pharmacotherapy to the individual patient.

000931 Vohra, J. K.; Burrows, G. D.; McIntyre, I.; Davies, B. Department of Cardiology, Royal Melbourne Hospital, Victoria 3050, Australia **Cardiovascular effects of nomifensine.** Lancet (London). 2(8095):902-903, 1978.

The cardiovascular effects of nomifensine, an antidepressant unrelated to the tricyclics or monoamine oxidase inhibitors, were investigated. A case is reported of a massive overdose of nomifensine with no significant cardiovascular effects. Ten inpatients with primary depressive illness were treated with either 100mg or 200mg daily of nomifensine and tested before and after 3 weeks of treatment on blood pressure, heartrate, electrocardiogram reading, and plasma nomifensine levels. No changes were observed in blood pressure or electrocardiogram readings, but an increase in heartrate was observed. It is concluded that nomifensine is relatively free from cardiovascular side-effects. 3 references.

16 METHODS DEVELOPMENT

000932 Bourne, R C.; Robinson, J. D.; Teale, J. D. Division of Psychiatry, Clinical Research Centre, Watford Road, Harrow HA1 3UJ, England **A simple radioimmunoassay for plasma diazepam and its application to single dose studies in man.** British Journal of Pharmacology (London). 63(2):371, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society in Guildford, England, a sensitive radioimmunoassay for plasma diazepam and its application to single dose studies were described. Cross-reactivity studies showed that the antiserum is specific for diazepam, with only flurazepam showing any interference in the assay. The major metabolite of diazepam, N-desmethyl-diazepam, did not cross-react with the antiserum. A comparison of the radioimmunoassay with a gas/liquid chromatographic method demonstrated a good correlation between the two techniques. When the method was used to study elimination of diazepam from the blood of four volunteers following a single 5mg dose of diazepam, peak levels ranging from 64-160ng/ml were found, with peak concentrations reached between 0.5-1.5hours after administration. These values demonstrate the individual variation in diazepam absorption and metabolism. 5 references. (Author abstract modified)

000933 Braithwaite, R. A.; Montgomery, S.; Robinson, J. D. Poisons Unit, Guy's Hospital, London SE1, England **A radioimmunoassay for amitriptyline and nortriptyline.** British Journal of Pharmacology (London). 63(2):370-371, 1978.

In a paper presented at the March 1978 meeting of the British Pharmacological Society in Guildford, England, a sensitive radioimmunoassay for amitriptyline and nortriptyline was described. The method is suitable for routine use, as no sample preparation other than a five-fold dilution of the plasma is required. Cross-reactivity studies demonstrated that the assay is specific for amitriptyline and nortriptyline, showing no cross reactivity with their metabolites or any drugs likely to be given in combined therapy. Results obtained with the radioimmunoassay are comparable to those obtained with a routine gas/liquid chromatographic method in plasma samples collected from three patient groups. 2 references. (Author abstract modified)

000934 Ferkany, J. W.; Smith, L. A.; Seifert, W. E., Jr.; Caprioli, R. M.; Enna, S. J. Department of Pharmacology University of Texas Medical School, P. O. Box 20708, Houston, TX 77025 **Measurement of gamma-aminobutyric acid (GABA) in blood.** Life Sciences (Oxford). 22(23):2121-2128, 1978.

Two analytical procedures, gas chromatography/mass spectrometry (GC/MS) and radioreceptor assay, both of which are capable of reliably and reproducibly measuring the gamma-aminobutyric acid (GABA) content of blood, are described. After withdrawal of blood, GABA levels remained stable with 25% to 50% of the GABA in whole blood found in the plasma fraction. Whole blood GABA concentrations ranged from 500pM/ml to 1200pM/ml in eight mammalian species, with human values being about 900pM/ml. In vivo administration of aminooxyacetic acid increased both blood and brain GABA to a similar extent. Results suggest that the measurement of this amino acid in blood may have both basic scientific and clinical utility. 28 references. (Author abstract modified)

000935 Fink, M.; Irwin, P. Department of Psychiatry, Health Sciences Center, SUNY, Stony Brook, NY 11790 **Electroencephalographic measures for pharmacodynamic analysis of psychoactive drugs in man.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1203-1207).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the use of electroencephalographic (EEG) measures for psychodynamic analysis of psychoactive drugs in normal male volunteers was reported. Studies of changes in quantitative EEG and blood levels of triflubazam, bromazepam, diazepam, and mianserin revealed well-defined relations between the measures. As a physiological response index, the quantitative EEG provided an accurate reflection of the cerebral changes accompanying drug administration. Practical applications of EEG measures in defining active compounds and their metabolites and in the pharmacodynamic analysis of compounds were discussed. 14 references. (Author abstract modified)

000936 Greenblatt, David J. Clinical Pharmacology Unit, Massachusetts General Hospital, Boston, MA 02114 **Determination of desmethyldiazepam in plasma by electron-capture GLC: application to pharmacokinetic studies of clorazepate.** Journal of Pharmaceutical Sciences. 67(3):427-429, 1978.

A rapid and sensitive method for analysis of intact desmethyldiazepam in plasma is reported. Plasma desmethyldiazepam concentrations were quantitated using electron capture gas/liquid chromatography. Following addition of diazepam as the internal standard, plasma was extracted at physiological pH into benzene-isoamyl alcohol prior to chromatography. Both diazepam and desmethyldiazepam were quantitatively extracted. The variation in identical samples was 5%, and the sensitivity was 5ng/

ml. The method is applicable to pharmacokinetic studies of clorazepate, a benzodiazepine derivative transformed to desmethyldiazepam prior to absorption. 22 references. (Author abstract)

000937 Gruen, P. H.; Sachar, E. J.; Altman, N.; Langer, G.; Halpern, F. S. Department of Psychiatry, Albert Einstein College of Medicine, Bronx, NY **Psychotropic drugs and neuroendocrine function in psychopathological conditions.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 961-969).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, a study of psychotropic drugs and neuroendocrine function in psychopathological conditions was reported. All major classes of neuroleptic and antipsychotic drugs were studied in humans, using plasma prolactin (PRL) as an indicator of hypothalamic tuberoinfundibular dopamine (TIDA) activity. Clinically efficacious drugs consistently stimulated PRL, but other psychotropic drugs did not. The PRL response was graded according to dose and correlated highly with clinical potency. Normal and schizophrenic patients did not differ in PRL responses, indicating that the TIDA system is not involved in schizophrenia. It was concluded that the PRL test is useful in evaluating the potential antipsychotic drugs in man. 32 references. (Author abstract modified)

000938 Itil, T. M. no address **Round table 3: quantitative electroencephalography in psychopharmacology.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 1737 p. Vol. 2. (p. 1135-1223).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the third round table session focused on quantitative electroencephalography (EEG) in psychopharmacology. Methodological developments and novel applications of quantitative EEG were discussed, and the use of quantitative EEG in screening drugs for psychotropic properties was described. Computer EEG findings with lisuride were also reported.

000939 Jenkins, Rand G.; Friedel, Robert O. Department of Psychiatry and Behavioral Sciences, University of Washington, Seattle, WA 98195 **Analysis of tricyclic antidepressants in human plasma by GLC-chemical-ionization mass spectrometry with selected ion monitoring.** Journal of Pharmaceutical Sciences. 67(1):17-23, 1978.

A method is described for the analysis of amitriptyline, doxepin, imipramine, nortriptyline, desmethyldoxepin, desipramine, and protriptyline in human plasma utilizing GLC-chemical-ionization mass spectrometry with selected ion monitoring. The assay is highly specific and is quantitative to at least 1ng/ml with a standard error typically less than 5%. Representative concentrations of the parent compounds and their monodemethylated metabolites, as measured in plasma samples from patients under treatment with tertiary amine tricyclic antidepressants, are given. 51 references. (Author abstract)

000940 Kaul, Pushkar N.; Whitfield, Lloyd R.; Clark, Mervin L. University of Oklahoma Health Sciences Center, Norman, OK 73069 **Quantitative determination of amitriptyline in blood.** Journal of Pharmaceutical Sciences. 67(1):60-62, 1978.

An assay was developed and standardized for amitriptyline and its hydroxylated tertiary amine metabolites in blood and other biological tissues. This method is capable of determining 5-15ng of these compounds/ml and is based on reacting the drug as base with 9-bromomethylacridine to form a quaternary product which, on photolysis, yields fluorescence in a stoichiometric fashion. The precision of the method is accurate to within 5%. 9 references. (Author abstract)

000941 Kellner, Robert; Sheffield, Brian F.; Simpson, George M. Psychiatry Service, Veterans Administration Hospital, 2100 Ridgecrest S.E., Albuquerque, NM 87108 **The value of self-rating scales in drug trials with nonpsychotic patients.** Progress in Neuro-Psychopharmacology. 2(2):197-205, 1978.

Recent studies on the use of self-rating scales in drug trials with nonpsychotic psychiatric patients and the history of the improvement criteria used in drug trials are reviewed. Recent studies show that commonly-used self-rating scales are less sensitive than observer rating scales, and undue reliance on self-rating scales could lead to misleading conclusions about the effectiveness of a drug. It is suggested that it is possible to construct self-rating scales of distress which compare favorably with observer rating scales. 19 references. (Author abstract modified)

000942 Pew, Stephen Dwight. University of Nebraska-Lincoln **A methodological study of the effect of psychotropic drugs on individual operant behavior. (Ph.D. dissertation).** Dissertation Abstracts International. 39(3):1495-B, 1978. Ann Arbor, Univ. Mfilms No. 7814704, 198 p., 1978.

The effects of psychotropic drugs on behavior were studied using two combined multiple baseline techniques in an attempt to develop a more objective methodology for examining the effects of particular compounds on an individual. Frequency data on a variety of behavior classes were recorded in three case studies where changes in medication were undertaken, and the aims were to: 1) evaluate the effect of Valium, no drugs, and Mellaril on the individual's behavior; 2) examine the effects of decreasing dosages of Haldol on a S's behavior; and 3) evaluate the effects of the withdrawal of Artane, Valium, and Haldol on several behavior classes in one S. Results suggest that the methodology provides objective information for evaluating the effects of drug alterations in clinical practice. It enables the clinician to be more precise in pharmacological treatments and permits the detection of effects of both drugs and environmental factors, thus allowing a more effective combination of drug and behavior therapy. (Journal abstract modified)

000943 Powers, Kathleen H.; Ebert, Michael H. Section on Experimental Therapeutics, LCS, NIMH, Bethesda, MD 20014 **Comparison of RIA and GC-MS assays for d-amphetamine. (Unpublished paper)** Bethesda, MD, NIMH, 1978. 15 p.

Amphetamine levels in plasma were measured using gas chromatography mass spectometry (GC-MS) and radioimmunoassay (RIA) to compare results obtained by the different methods. It is suggested that quantification of low levels of psychotropic drugs in small volumes of plasma require sensitive and accurate measurement methods. Correlation of the results obtained by the two methods was found to be positive and high. The average coefficient of variation between assays for GC-MS was 5.8% and for RIA was 12.3%, while the average coefficient of variation within assays for GC-MS was 4.9% and for RIA 6.9%. Although GC-MS was 1.9times more sensitive than RIA, for most purposes it is suggested that the convenience of RIA methods outweighs the technical superiority of GC-MS. 5 references. (Author abstract modified)

000944 Robinson, J. D.; Risby, D.; Riley, G.; Aherne, G. Wynne. Behring Institute, Hoechst Pharmaceutical Research Laboratories, Milton Keynes, Bucks., England **A radioimmunoassay for the determination of combined amitriptyline and nortriptyline concentrations in microliter samples of plasma.** Journal of Pharmacology and Experimental Therapeutics. 205(2):499-502, 1978.

A sensitive radioimmunoassay for amitriptyline and nortriptyline in blood was developed. The antibodies used in the radioimmunoassay were raised in a sheep against a conjugate of nortriptyline and bovine serum albumin. Using tritiated amitriptyline as the label, the assay is capable of detecting concentrations as low as 2.0ng/ml in a 50mcl sample of plasma. Crossreactivity studies demonstrated the specificity of the radioimmunoassay for both amitriptyline and nortriptyline, and comparison with gas/liquid chromatography assay confirmed the applicability of the assay for routine use. When the radioimmunoassay was used to study plasma drug levels after single oral administration of amitriptyline to four volunteers, a wide variation in maximum drug concentrations (18-62ng/ml) was seen, with the time taken to reach maxima ranging from 1.5-3 hours. A second concentration peak was seen in three of the subjects, at 4-5 hours after ingestion of the drug. 9 references. (Author abstract modified)

000945 Sims, Andrew; White, A. C.; Garvey, K. Department of Psychiatry, Queen Elizabeth Hospital, Birmingham B15 2TH, England **Problems associated with the analysis and interpretation of saliva lithium.** British Journal of Psychiatry (London). 132(February):152-154, 1978.

Two strategies are utilized in an attempt to improve the reliability of saliva lithium levels as a predictor of serum levels in individual patients undergoing lithium prophylaxis therapy. The first strategy involved the identification and quantification of a naturally-occurring marker in the saliva in order to accurately monitor saliva flow. However, the person-to-person variation remained unacceptably high, despite better prediction of serum levels from a multiple combination of markers. The second method, involving serially-paired results in individual patients, also showed occasional excessive variation. Although the strategies used show a satisfactory correlation from zero lithium through the therapeutic range, it cannot be assumed that the relationship would remain for excessive serum levels of lithium. Although in exceptional circumstances salivary lithium has proved useful, caution is recommended in the use of saliva levels when serum assessments can be readily performed. 4 references. (Author abstract modified)

000946 Spiegel, Herbert E.; Kucera, Vera. Hoffman-La Roche, Inc., Kingsland Street, Nutley, NJ 07110 **Dopa stability in plasma and plasma extracts.** Research Communications in Chemical Pathology and Pharmacology. 21(2):371-374, 1978.

In a study of sample preparation for analysis of plasma Dopa, unextracted heparinized plasma samples containing L-Dopa were refrigerated or frozen for at least 2 weeks with negligible losses in drug. Preextraction or pretreatment with antioxidants and metal chelators was not required for sample stability. The stability of L-Dopa in untreated, frozen samples obviates difficulties in collection and processing of plasma samples in clinical settings remote from analytical laboratory facilities. 2 references. (Author abstract modified)

000947 Summers, M. P. Department of Pharmaceutics, School of Pharmacy, University of London, London WC1N 1AX, England **Glass formation in barbiturates and solid dispersion systems of barbiturates with citric acid.** Journal of Pharmaceutical Sciences. 67(11):1606-1610, 1978.

In a study of the potential of glass systems for improved drug dissolution, glasses were prepared from 12 barbiturates. The viscosities and glass transition temperatures of the glasses were dependent on the structure of the groups present on the C-5 and N-1 atoms. Solid dispersions were prepared from hexobarbital, pentabarbital, and heptabarbital formulated with citric acid. The glass transition temperatures of these systems indicated that a 1:1 molar ratio complex was formed between the barbiturate and citric acid and that intermolecular bonding was stronger in the complex than in the individual components. 11 references. (Author abstract modified)

000948 Sun, Sy-Rong. Pharmaceutical Products Division, Abbott Laboratories, North Chicago, IL 60064 **Fluorescence-TLC densitometric determination of diazepam and other 1,4-benzodiazepines in serum.** Journal of Pharmaceutical Sciences. 67(10):1413-1415, 1978.

A sensitive fluorescence/thin layer chromatography (TLC) densitometric procedure was developed for the specific determination of diazepam and its metabolites desmethyldiazepam and oxazepam in serum. After extraction from serum with benzene, the compounds were separated by TLC and converted with a sulfuric acid spray to greenish yellow fluorescence spots with Rf values of 0.72, 0.43, and 0.17, respectively. Quantitation of the TLC plate was accomplished by scanning with a densitometer at 380nm. The sensitivities of the assay were 18ng/ml for diazepam, 6ng/ml for desmethyldiazepam, and 5ng/ml for oxazepam. This procedure is also applicable to other 1,4-benzodiazepines in biological fluids. 18 references. (Author abstract)

000949 Sun, Sy-Rong. Pharmaceutical Products Division, Abbott Laboratories, North Chicago, IL 60064 **Quantitative determination of chlordiazepoxide and its metabolites in serum by fluorescence TLC-densitometry.** Journal of Pharmaceutical Sciences. 67(5):639-641, 1978.

A sensitive fluorescence thin-layer chromatography(TLC)/densitometric procedure was developed for the specific determination of chlordiazepoxide (I) and its metabolites, demoxepam (II) and desmethylchlordiazepoxide (III), in serum. After extraction from serum with ether, I, II, and III were separated by TLC and converted with a sulfuric acid spray to pale blue, green, and blue fluorescence spots, respectively. Quantitation was accomplished by scanning the plate with a densiometer at 390nm (I), 430nm (II), and 390nm (III). The sensitivities were 0.05, 0.01, and 0.01mcg/ml serum for I, II, and III, respectively. The procedure was successfully applied to measurement of I, II, and III in human serum after oral administration of 20mg chlordiazepoxide hydrochloride. 13 references. (Author abstract)

000950 Sun, Sy-Rong; Hoffman, D. J. Pharmaceutical Products Division, Abbott Laboratories, North Chicago, IL 60064 **Rapid GLC determination of chlordiazepoxide and metabolite in serum using on-column methylation.** Journal of Pharmaceutical Sciences. 67(11):1647-1648, 1978.

A rapid gas-liquid chromatographic method was developed for the assay of chlordiazepoxide in serum. After chlordiazepoxide was extracted with ether, it was methylated with trimethylanilinium hydroxide in the injection port and detected by electron capture. The assay is simple and sensitive and can be automated for large scale clinical analysis. 7 references. (Author abstract)

17 MISCELLANEOUS

000951 Ananth, J. Allan Memorial Institute, 1025 Pine Ave. West, Montreal, Quebec Canada, H3A 1A1 **Clinical prediction of antidepressant response.** International Pharmacopsychiatry (Basel). 13(2):69-93, 1978.

A review of the available information on clinical prediction of antidepressant response is presented, highlighting new techniques. The prediction tools are the assessment and isolation of pretreatment variables, which are identified as premorbid personality, age and sex, and genetic and family history. Studies assessing the drug response in various ethnic groups are examined. Clinical variables such as syndromes (including endogenous neurotic, psychotic/neurotic, and typical/atypical depressions) and symptoms (including anxiety, phobias, hostility, thought disorder, sleep, motor retardation, agitation, etc.)are reviewed. It is noted that in addition to clinical variables, biochemical and statistical approaches have also yielded significant results in prediction. 121 references.

000952 Bloom, F. E.; Rossier, J.; Battenberg, E. L. F.; Bayon, A.; French, E.; Henriksen, S. J.; Siggins, G. R.; Segal, D.; Browne, R.; Ling, N. A. V. Davis Center for Behavior Neurobiology, Salk Institute, La Jolla, CA 92037 **Beta-endorphin: cellular localization, electrophysiological and behavioral effects.** Advances in Biochemical Psychopharmacology. 18:89-109, 1978.

Studies of the distribution and cellular localization, electrophysiological effects, and behavioral effects of beta-endorphin are summarized. Radioimmunoassays revealed significant amounts of beta-endorphin in whole brain, hypothalamus, and midbrain in rats; beta-endorphin and the enkephalins were associated with different neuronal systems in rat brain. Immunocytochemical studies indicated that beta-endorphin reactive cells are restricted to the basal hypothalamus and that processes from these cells are restricted to midline terminal fields near the ventricular surfaces, whereas the enkephalins are contained primarily in short interneurons in discrete regions throughout the CNS. Electrophysiological studies showed that beta-endorphin precipitates electroencephalographic seizures in rats with no behavioral convulsions, suggesting that the seizure activity is primarily restricted to the limbic system with no motor involvement. Comparison of the behavioral effects of beta-endorphin to those of haloperidol indicated that beta-endorphin is not a naturally-occurring neuroleptic. The involvement of beta-endorphin as an etiological factor in mental illness and the potential therapeutic effects of the peptides are discussed. 46 references.

000953 Breese, George R.; Mueller, Robert A.; Mailman, Richard B.; Frye, Gerald D.; Vogel, Richard A. Biological Sciences Research Center, 220H, Division of Health Affairs, University of North Carolina, Chapel Hill, NC 27514 **An alternative to animal models of central nervous system disorders: study of drug mechanisms and disease symptoms in animals.** Progress in Neuro-Psychopharmacology. 2(3):313-325, 1978.

The study of drug mechanisms of action and of disease symptoms in animals are discussed as alternatives to animal models of CNS disorders. It is suggested that understanding psychiatric and neurological disorders has been advanced by examining mechanisms by which psychotropic drugs alter neural functions and by defining neural pathways involved in controlling individual functions that are abnormal in CNS disorders. These approaches are discussed in relation to research in depression, minimal brain dysfunction, Parkinson's disease, and schizophrenia. The limitations of complete animal models of human disorders of the CNS are also considered. 94 references. (Author abstract modified)

000954 Chrusciel, T. L. Institute for Drug Research and Control, Chelmska 30/34, PL-00-725, Warsaw, Poland **/Research questions on factors that influence drug response./** Questions we recognize but cannot formulate. International Pharmacopsychiatry (Basel). 13(2):112-117, 1978.

Important research questions concerning factors that may interfere with responses to drugs, particularly psychotropic drugs, are examined. The individual response to psychotropic drugs, although dose dependent, is not stable. In some countries, the variations in drug response are more pronounced, indicating a higher level of susceptibility of patients. Factors of importance influencing the response to psychotropic drugs may be subdivided into genetic and environmental ones. It is suggested that in research meant to clarify the difference in relation to the geographic, ethnic and sociocultural differences among nations and individuals of various ethnic origins in their alien communities, consideration must be given to genetic factors and environmental differences in the daily surroundings. In addition, the importance of both social and psychological factors should be recognized in the evaluation of effectiveness of pharmacotherapy. 8 references. (Author abstract modified)

000955 Cuello, A. Claudio. MRC Neurochemical Pharmacology Unit, Department of Pharmacology, Hills Road, Cambridge CB2 2QD, England **Enkephalin and substance-P containing neurones in the trigeminal and extrapyramidal systems.** Advances in Biochemical Psychopharmacology. 18:111-123, 1978.

The organization and site of origin of enkephalin (EK) and substance-P (SP) containing neurons (peptidergic neurons) within the trigeminal and extrapyramidal systems were investigated in male Wistar rats, using immunocytochemical techniques. A dense band of SP immunoreactive fibers was observed overlying the limits of the substantia gelatinosa of the nucleus spinalis trigemini. EK immunoreactive fibers were observed in smaller numbers than SP containing fibers in the substantia gelatinosa, formatio reticularis, and nucleus of the fasciculus solitarius, but a greater number of EK immunoreactive elements was detected in the peripendymal periventricular gray and nucleus originis nervi hypoglossus. Lesion studies indicate that EK immunoreactive fibers are largely, if not solely, of central origin and suggest that SP sensory neurons in the trigeminal system may store SP in both the central and peripheral terminals. Both EK and SP immunoreactive fibers were found in the extrapyramidal system. A dense mesh-like innervation of EK fibers was found in the globus pallidus. Lesion studies suggest that a long enkephalinergic pathway originates in the caudoputamen and terminates in the globus pallidus. EK immunoreactive cell bodies were not observed in the caudoputamen in this study, however. 31 references.

000956 Deniker, P.; Radouco-Thomas C.; Villeneuve, A.; Baronet-LaCroix, D.; Garcin, F. Hopital Sainte-Anne, Paris, France **Neuro-psychopharmacology: Proceedings of the Tenth Congress of the Collegium Internationale Neuro-Psychopharmacologicum Quebec, July 4-9, 1976.** Oxford, Pergamon, 1978. 804 p. Vol. 2.

The proceedings of the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held July 1976 in Quebec, are presented. Topics considered in plenary sessions, roundtable discussions, and workshops include psychotropic drugs and neuroendocrinology, interactions of psychotropic drugs, biochemical and pharmacological typology of depression,

quantitative electroencephalography in psychopharmacology, drug abuse and pharmacopsychosis, mechanisms of drug dependence, neuropsychotropic drugs and the immature brain, control of catecholamine biosynthesis, modification of drug-reinforced responding, human brain banks, models in geriatric neuropsychopharmacology, and communications in neuropsychopharmacology.

000957 Garcin, F. no address **Round table 7: new aspects in neuropsychopharmacology.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1403-1435).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1975, the seventh round table session focused on new aspects in psychopharmacology. The function and relevance of cerebral trace amines, (including meta-tyramine, para-tyramine, beta-phenylethylamine, and tryptamine) were reviewed. Negative reinforcing properties of psychotropic drugs were discussed, and the desensitization of beta-adrenergic receptors to beta-adrenergic agonists was reported.

000958 Geiger, R. Hoechst Aktiengesellschaft, D-6230 Frankfurt 80, Germany **Chemistry of neuropeptides regulation.** Advances in Biochemical Psychopharmacology. 18:23-30, 1978.

The chemistry and origins of neuropeptides are reviewed in light of recent research on neurotensin, substance-P, the enkephalins, and other endogenous peptides. The structural similarities between many peptide hormones and the frequent repetition of related units in the amino acids of single hormones suggest that the peptides may have developed from a common primitive gene by alternating gene duplication and mutations. This principle is complemented by the amine precursor uptake and decarboxylation cell concept, which implies that most peptide hormones are derived from cells that were originally neurons. It is suggested that an extended network of relationships spreads over cells that produce the hormones, transmitters of orders, and receiving cells. The role of peptides as glandular or local hormones and as neurotransmitters or neuroendocrine transmitters suggests that the peptides may share some basic principles of action on the molecular level. 17 references.

000959 Gray, Jeffrey A. Department of Experimental Psychology, University of Oxford, Oxford, England **Anxiety.** Human Nature. 1(7):38-45, 1978.

The use of drugs to control anxiety are discussed. The use of minor tranquilizers for the control of anxiety is widespread and still growing in Western society. It was found that when people use minor tranquilizers to lose their disabling anxieties, they may also be losing their ability to cope. Further, the tranquilizers may increase the tendency to give up when faced with difficulties. Studies with rats indicate that antianxiety drugs operate by reducing fear of impending pain, failure, frustration, or disappointment. The drugs do not lessen the impact of failure or pain, once that failure or pain occurs. Antianxiety drugs block the synthesis of norepinephrine and increase the threshold of the theta driving curve at 7.7hertz. The data point to the dorsal adrenergic bundle and its connections with the septo hippocampal system as the place where minor tranquilizers have their major effects. 5 references.

000960 Gualtieri, C. T.; Powell, S. F. Department of Psychiatry, University of North Carolina, Chapel Hill, NC 27514 **Psychoactive drug interactions.** Journal of Clinical Psychiatry. 39(9):720-729, 1978.

Drug interactions of clinical interest to psychiatrists are described and tabulated. Interactions that arise from serial or simultaneous administration of two or more drugs (Polypharmacy) can enhance or diminish the clinical usefulness of a drug or its toxic effects. These interactions are seen as arising from changes in absorption, protein binding, metabolism, excretion, or activity at a common site of action. Drug interactions are summarized for stimulants, neuroleptics, tricyclic antidepressants, monoamine oxidase inhibitors, lithium, anticonvulsants, and sedatives and hypnotics. 46 references. (Author abstract modified)

000961 Heffler, David; Lisman, Stephen A. Willard Psychiatric Center, Willard, NY 14588 **Attribution and insomnia: a replication failure.** Psychological Record. 28(1):123-128, 1978.

An attempt to replicate the negative placebo affect described by Storms and Nisbett (1970) is described. Thirty subjects who reported 30 minutes or longer to fall asleep were administered a placebo pill and told that the pill would have arousal or relaxation effects. Care was taken to adhere as closely as possible to the original Storms and Nisbett procedures, but with design improvements such as lengthening the assessment and treatment periods and balancing instructions for both groups. Both groups reported means which were not significantly different from baseline sleep latencies. These negative findings, consistent with other recent replication failures, suggest the need for caution in the clinical application of attribution theory. 9 references. (Author abstract modified)

000962 Helmchen, H. no address **Round table 1: interaction of psychotropic drugs.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1057-1106).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the first round table session focused on polypharmacy and interactions of psychotropic drugs. Drug interactions on the pharmacokinetic and pharmacodynamic levels were discussed. Experimental findings on the interaction of neuroleptics with tricyclic antidepressants, of tricyclic antidepressants with monoamine oxidase inhibitors, of lithium with other psychotropic drugs, and of the neuroleptics clozapine and haloperidol were reported.

000963 Herz, A. no address **Round table 5: mechanism of drug dependence.** In: Deniker, P., Neuropsychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1291-1345).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the fifth round table session focused on mechanisms of drug dependence. Characteristics of the opiate receptor were discussed, with reference to possible conformational changes during the development of tolerance and dependence. Characteristics of endogenous ligands for the opiate receptor were discussed in terms of their dependence liability. Possible mechanisms of acute and chronic opiate actions were described.

000964 Hofmann, A. CH-4117 Burg i.L., Switzerland **Historical view on ergot alkaloids.** Pharmacology (Basel). 16(Suppl. 1):1-11, 1978.

A short survey of the history of ergot, the original source of ergot alkaloids, is presented. Once a dreaded poison, ergot has changed its role over the centuries to become a rich source of valuable pharmaceuticals. In the Middle Ages it was the cause of epidemics of ergotism, which cost thousands of people their lives. Ergot was first mentioned by the German physician Lonitzer in 1852 as a remedy used by midwives for quickening childbirth. The isolation of pharmacologically-useful alkaloids started in 1906 with the discovery of ergotoxine and its adrenolytic activity by Barger, Carr and Dale. In 1918 Stoll isolated ergotamine, the first chemically pure ergot alkaloid, which found widespread therapeutic use in obstetrics and internal

medicine. In 1935 the specific oxytoxic principle of ergot, ergonovine, was discovered simultaneously in four separate laboratories. Since then, worldwide investigations on ergot alkaloids have resulted in the elucidation of their structures and total syntheses and preparation of valuable therapeutics such as Methergine, Hydergine, Dihydergot, and others. 5 references. (Author abstract)

000965 Husain, Arshad; Kashani, Javad. Section of Child Psychiatry, Dept. of Psychiatry, University of Missouri School of Medicine, Columbia, MO **Maternal medication and minimal brain dysfunction -- a possible relationship.** Missouri Medicine. 75(10):508-511, 1978.

A possible relationship between certain maternal medications and child minimal brain dysfunction and hyperactivity is discussed. The literature on the effects of drugs and chemical agents during the developmental years is reviewed. A survey of 74 mothers whose children were admitted to a pediatric developmental evaluation clinic is reported. The 62 children whose mothers took medication during pregnancy showed a higher incidence of physical abnormalities, hyperactivity, and learning disabilities, as well as a lower mean IQ than did the children whose mothers reported no medication. 17 references. (Author abstract modified)

000966 Kanarkowski, Roman; Targonska, Anna. Klinika Psychiatrii AM, ul. Lomzynska 54, 85-863 Bydgoszcz, Poland / **Some problems of clinical psychopharmacology (pharmacokinetics and drug interactions).**/ Niektore problemy psychofarmakologii klinicznej (farmakokinetyka i interakcje lekow). Psychiatria Polska (Gdansk-Wrzeszcz). 12(2):263-272, 1978.

Pharmacokinetic parameters of some drugs administered in psychiatric treatment are presented, and the method of using these parameters to determine individual optimum dosages is examined. The biological half-life, fixed rates for elimination processes, relative distribution capacity, and therapeutic concentration of carbamazepine, clonazepam, diphenylhydantoin, ethosuximide, phenobarbital, primidone, demethyldiazepam, diazepam, nitrazepam, oxazepam, imipramine, and lithium carbonate are listed. Examples of drug interactions also are given, and the stages of drug interaction are described. 15 references.

000967 Kopin, I. J. no address **Workshop 1: control of catecholamine biosynthesis.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1437-1470).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, Workshop 1 focused on the control of catecholamine biosynthesis. The poststimulation increase in catecholamine biosynthesis in noradrenergic neurons was discussed. The induction and activation of tyrosine hydroxylase and the regulation of tyrosine hydroxylase in the superior cervical ganglia were also considered.

000968 Kosterlitz, H. W. no address **Opiates and endogenous opioid peptides.** Amsterdam, North-Holland, 1976. 456 p. $36.50.

Neuropharmacological research on the demonstration of opiate receptors as well as the isolation, purification, and identification of endogenous opiates is presented. The book is a compilation of the 50 papers and 18 short communications presented at the Annual Meeting of the International Narcotics Research Club at Aberdeen in July 1976. New results obtained mainly by electrophysiological, biochemical, and behavioral methods are detailed.

000969 Kosterlitz, Hans W.; Hughes, John. Unit for Research on Addictive Drugs, University of Aberdeen, Marischal College, Aberdeen, AB9 1AS, Scotland **Development of the concepts of opiate receptors and their ligands.** Advances in Biochemical Psychopharmacology. 18:31-44, 1978.

Historical developments in the search for the ligands of the opiate receptors are outlined. Two animal models, the depression of electrically-evoked contractions of the guinea-pig ileum and the mouse vas deferens, were developed as highly specific bioassay systems for predicting the analgesic potency of drugs in humans. Specific recognition sites or opiate binding sites were also demonstrated in the central nervous system. The belief that such specific receptors would not have developed accidentally led to the search for endogenous ligands for the opiate receptor. Subsequent research led to the identification of the enkephalins and endorphins. The distribution and metabolism of the enkephalins and endorphins, the interaction of these opioid peptides with opiate receptors, the physiological significance of enkephalin and endorphin, and tolerance and dependence to the opioid peptides are discussed. 68 references.

000970 Leeds, A. A. International Reference Center on Psychotropic Drugs, Psychopharmacology Research Branch, NIMH, Rockville, MD **Communication through publication.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1705-1707).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the dissemination of information via journals, abstract and index journals, books, and monographs was discussed. It was suggested that the future of publications is in doubt because of the high cost of preparation, printing, and mailing, as well as the quantity of material flooding the field. Self-restraint on the part of authors and more critical evaluation of quality by editors were urged to cope with this problem. It was suggested that only papers that contribute to new knowledge in the field be published and that authors should write more concisely and effectively. (Author abstract modified)

000971 Leeds, A. A. International Reference Center on Psychotropic Drugs, Psychopharmacology Research Branch, NIMH, Rockville, MD **Information dissemination in neuropsychopharmacology: viewpoint from the WHO International Reference Center for Psychotropic Drugs.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1697-1698).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the World Health Organization International Reference Centers Network for Psychotropic Drugs was discussed. The network was established in 1967 and includes 25 centers around the world. The centers have developed various projects to facilitate the dissemination of new psychotropic drug information among the scientific community. These projects include the collaborative development of a classification for psychotropic drugs, a reporting form to make unpublished information available to individual investigators, an International Directory of Investigators in Psychopharmacology, and the publication of the Psychopharmacology Bulletin. (Author abstract)

000972 Leeds, A. A. no address **Workshop 7: communications in neuro-psychopharmacology.** In: Deniker, P., Neuropsychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1689-1775).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, Workshop 7 focused on communications in psychopharmacology. The information dissemination activities of the World Health Organization International Reference Centers Network for Psychotropic Drugs and its collaborative and regional reference centers

were discussed. Communications needs in the field were outlined, and the importance of computer and audio/visual communications channels to supplement communication through publications was emphasized.

000973 Leigh, Hoyle. Psychiatric Consultation-Liaison Service, Dept. of Psychiatry, Yale University School of Medicine, 333 Cedar Street, New Haven, CT 06510 **Self-control, biofeedback, and change in "psychosomatic' approach.** Psychotherapy and Psychosomatics (Basel). 30(2):131-136, 1978.

The application of biofeedback to borderline hypertensives sought to determine whether potentiation of biofeedback would be possible. Subjects' blood pressures were artificially reduced with drugs while feedback on blood pressure was provided to the subjects. Placebo, hydralazine, and chlordiazepoxide were used with six subjects. Results indicate that each time a subject's systolic pressure was reduced after ingestion of a capsule, placebo or otherwise, the subject was able to lower his systolic pressure to a far greater degree than during the following nonmedication session. It is suggested that hypertensives seeking biofeedback treatment are extremely internal in locus of control and tend to generalize their self-control to other areas of life to foster health and to prevent illness. (Author abstract modified)

000974 Levine, J. Psychopharmacology Research Branch, NIMH, Rockville, MD 20857 **Psychopharmacology research: an attempt at an overview.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1011-1018).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, developments in psychopharmacology research during the last 20 years were reviewed. The overview was based on a survey of all research grant awards made between July 1967 and June 1975 by the NIMH psychopharmacology program. Special attention was given to the use of phenothiazines in chronic schizophrenia and to outpatient pharmacotherapy and psychosocial therapy. (Author abstract modified)

000975 Longo, V.G. no address **Plenary session 1: psychotropic drugs and neuroendocrinology.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 934-1003).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the first plenary session focused on psychotropic drugs and neuroendocrinology. The effect of psychotropic drugs on neuroendocrine function in psychopathological conditions, sexual behavior, and other behavior was reviewed. Other topics considered include monoaminergic regulation of the neuroendocrine transducer that controls adrenocorticotropic hormone secretion; stimulation of growth hormone and prolactin release by morphine and opiate-like peptides; interaction of psychotropic drugs with brain oligopeptides; pituitary-adrenal system hormones and behavior; and hormones in the treatment of nervous and mental disease.

000976 McFadden, I. Joseph. Department of Neuropsychiatry and Behavioral Science, University of South Carolina, Columbia, SC 29208 **Use and misuse of psychotropic drugs: a current perspective.** Journal of the South Carolina Medical Association. 74(6):281-283, 1978.

The major categories of psychotropic medication and the emotional or mental conditions for which they are used, as well as the potential for misuse or abuse and potential side-effects, are reviewed. Without exception, virtually all of the benzodiazepine compounds and meprobamate are potentially addicting. Perhaps no other group of currently prescribed drugs has such abuse potential as the minor tranquilizers. Certain antihistamine compounds with tranquilizing properties such as hydroxyzine are nonaddicting and should be considered for use. The types of chemotherapy used in the treatment of different types of depresssive illness are reviewed, and it is noted that with all types of depressive illness, the question of maintenance therapy is raised. Discontinuance of medication significantly increases the probability of reoccurrence of either depression or mania. Although there is now a wide choice of different classes of neuroleptics, it should be recognized that due to their common mechanism of action, no conclusive evidence has shown any one drug superior to any other. The most serious side-effect of the antipsychotic drugs is tardive dyskinesia. The use of major tranquilizers in the treatment of anxiety or depression, where schizophrenia is not present, must now be seriously questioned--with major medico-legal implications. 8 references.

000977 McGeer, Patrick L.; Eccles, John C.; McGeer, Edith G. University of British Columbia, Vancouver, British Columbia, Canada **Basic behavioral patterns.** In: McGeer, P., Molecular neurobiology of the mammalian brain. New York, Plenum, 1978. 644 p. (p. 465-500).

The anatomy, physiology, neurochemistry, and neuropharmacology of mood and behavior are explored. Topics discussed include: visceral innervation and feelings; central coordination of behavior; central amines and behavior; psychoactive drugs; neuroleptics or major tranquilizers; reserpine; phenothiazines; butyrophenones; thioxanthenes; minor tranquilizers or anxiolytics; antidepressants including MAO inhibitors and tricyclic antidepressants; stimulants; hallucinogenic agents such as indolic hallucinogens, phenylalkylamine derivatives, and glycolic acid esters; mental illness; theories of schizophrenia including the dopamine hypothesis, the noradrenaline hypothesis, the serotonin hypothesis, and hypotheses involving acetylcholine and gamma-aminobutyric acid; and theories of affective psychoses including the noradrenaline hypothesis and the serotonin hypothesis.

000978 Murphy, Dennis L. Clinical Neuropharmacology Branch, NIMH, Bethesda, MD 20014 **Substrate-selective monoamine oxidases -- inhibitor, tissue, species and functional differences.** Biochemical Pharmacology. 27(15):1889-1893, 1978.

Recent research on the substrate specificity of the monoamine oxidases (MAOs) is reviewed. The different neuroamines (norepinephrine, serotonin, and dopamine) are principally inactivated by either type A or type B MAO. Inhibitors of high specificity for the type A or type B MAO have been developed and have recently begun to be evaluated as adjuncts in the treatment of Parkinson's disease, depression, and other disorders in the hope that more selective clinical effects and lesser toxicity might be found. Increasing information on the differential localization of type A and type B MAO in various tissues, brain areas, cell lines, and subcellular preparation offers the possibility of better understanding of the functional roles of MAO in detoxification, regulation of cellular amine levels and amine synthesis, and false transmitter effects. Limitations in the MAO-A and MAO-B model for substrate selectivity are discussed in relation to inhibitor-based characterization of mitochondrial forms of MAO, substrate selectivity of the MAOs, and the functional consequences of multiple forms of MAO. 6 references.

000979 Murthy, M. R. V. no address **Round table 6: neuropsychotropic drugs and immature brain.** In: Deniker, P., Neuropsychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1347-1401).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the sixth round table session focused on neuropsychotropic drugs and the immature brain. The changing relationships among neurotrans-

mitter systems in the developing brain were reviewed, and the implications of these changes for psychopharmacology were discussed. The development of the opiate receptor and enkephalin in rat brain, the behavioral consequences of early developmental exposure to chlorpromazine, and the role of transfer ribonucleic acid in the formation of neuroactive substances were also discussed.

000980 no author. no address **Workshop 3: the whole patient in response to pharmacotherapy.** In: Deniker, P., Neuro-psychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1537-1552).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, Workshop 3 focused on the whole patient in response to pharmacotherapy. While some psychotic and depressed patients respond to either drugs or psychotherapy alone, others require a combination of the two. Psychotropic drugs such as phenothiazines often permit the psychotic patient to receive psychotherapy more rapidly. The psychiatrist should take into account the organic and social factors that may have generated the disorder in determining the proper combination of pharmacotherapy and psychotherapy for treating the psychotic or depressed patient.

000981 no author. no address **Amphetamine conferees rally behind psychiatrist.** Medical World News. 19(21):40,45, 1978.

The legal, professional, and social implications of prescribing amphetamines were highlighted at a national amphetamine conference held in San Francisco. Much discussion centered on the plight of Arnold Mandell, a California psychpharmacologist, who was censured for prescribing amphetamines for football players. Fear was expressed by a number of conferees that federal and state regulatory practices could put them in similar legal jeopardy. Particular exception was taken to the California Board of Medical Quality Assurance stand that the Physician's Desk Reference (PDR) should serve as a standard of prescribing practice. It was suggested that the PDR was no substitute for clinical judgment or experience and that attempts to curtail the use of amphetamines as anorexics could curtail other uses as well without affecting street availability of the drug.

000982 no author. no address **FDA guidelines for the clinical evaluation of psychotropic drugs -- antidepressant and antianxiety drugs.** Psychopharmacology Bulletin. 14(2):45-63, 1978.

FDA guidelines for clinical evaluation of psychotropic (antidepressant and antianxiety) drugs are presented. Psychotropic drug guidelines have been developed to clarify the planning, monitoring, analysis, and evaluation of clinical studies of investigational new drugs with anticipated efficacy in the treatment of anxiety, depression and psychosis. These guidelines represent a reasonable set of considerations in planning and executing appropriate clinical studies at various stages of drug development and in documenting and evaluating the results of individual studies relevant to establishing safety and efficacy.

000983 no author. no address **Psychotropic drugs in pregnancy, infancy, childhood.** British Journal of Psychiatry (London). 132(February):200-201, 1978.

Papers presented at a symposium held under the auspices of the British Association for Psychopharmacology in November 1977, in London are summarized. The following papers on the effects of psychotropic drugs given during pregnancy, infancy and childhood were presented: 1) Tests of Teratogenicity on Psychotropic Drugs, 2) The Effects of Psychotropic Drugs on Spermatozoa and Spermatogenesis, 3) The Placenta and Psychotropic Drugs, 4) The Excretion of Psychotropic Drugs in Breast Milk, 5) The Metabolism of Psychotropic Drugs in Infancy and Childhood, 6) Pharmacological Aspects of Enuresis, 7) The Management of Epilepsy in Infancy and Childhood, 8) The Management of the Hyperkinetic Child, and 9) The Management of Depression in Childhood.

000984 Payn, Stephen B. Department of Psychiatry, New York Medical College, New York, NY **Group pharmacotherapy for withdrawn schizophrenic patients.** Canadian Psychiatric Association Journal (Ottawa). 23(2):97-99, 1978.

A method in which regressed schizophrenic patients on maintenance doses of neuroleptics receive their prescriptions in a group setting is described. Each group meets once a month for 1 to 1 - 1/2 hours and is conducted by a psychiatrist, either alone or with a social worker. Toward the end of the session, the psychiatrist writes the prescriptions while the patients continue to talk. Guided by the therapist, the patients learn to experience the give and take of interpersonal relationships. The result is a shift from the patients' preoccupation with themselves toward an interest in other people. While only a few patients have improved sufficiently to be able to work, the group experience has helped most participants by leading them toward involvement with other people. 3 references. (Author abstract modified)

000985 Queisnerova, M.; Svatek, E.; Metysova, J. Research Institute for Pharmacy and Biochemistry, 130 60 Prague 3, Czechoslovakia **Metabolism of octoclothepin. Some recent findings.** Activitas Nervosa Superior (Praha). 20(1):47-48, 1978.

In a paper read at the 19th Annual Psychopharmacological Meeting, held in Jesenik, Czechoslovakia during January 1977, recent findings concerning the metabolism of octoclothepin are reviewed. Metabolic studies of octoclothepin, an original Czechoslovak neuroleptic, have focused on the urinary excretion of metabolites in man and rat, and on their presence in some organs and the blood. In rat tissues, especially in the liver and kidney, chromatographic analysis revealed mainly unchanged octoclothepin, octoclothepin-S-oxide, and noroctoclothepin-S-oxide. In rat blood, only octoclothepin was found. 8 references.

000986 Rifkin, Arthur; Quitkin, Frederic. Depression Evaluation Service, New York State Psychiatric Institute, New York, NY **What's new in the psychopharmacology of schizophrenia.** Bulletin of the New York Academy of Medicine. 54(9):869-878, 1978.

In a paper presented at a combined meeting of the Section on Psychiatry of the New York Academy of Medicine and the New York County District Branch of the American Psychiatric Association, held in New York, November 1977, new developments in the psychopharmacology of schizophrenia were discussed. There is no convincing evidence that any of the antipsychotics introduced since chlorpromazine are more effective, and there is no firm evidence that any of these drugs have any greater therapeutic activity. New developments consist of refinements in the use of drug treatment, and new knowledge concerning adverse reactions. It is clear that long-term treatment can ameliorate the morbidity of schizophrenia, but it is also clear that long-term treatment can cause serious side-effects. Progress in the direction of drugs that are more effective and safer is still considered a pressing need. 69 references.

000987 Robinson, Donald S.; Nies, Alexander; Ravaris, C. Lewis; Ives, John O.; Bartlett, Diantha. Clinical Pharmacology Unit, University of Vermont College of Medicine, Burlington, VT 05401 **Clinical pharmacology of phenelzine.** Archives of General Psychiatry. 35(5):629-635, 1978.

The clinical use of monoamine oxidase (MAO) inhibitors is reviewed. It is noted that newer clinical and analytic techniques have recently been applied to investigations of this class of drugs in man; the results show that drugs such as phenelzine are effective in nonendogenous depression and phobic disorders. Clinical response to phenelzine is related to platelet MAO inhibition and dosage per unit bodyweight. High percent MAO inhibition in platelets at 2 weeks is associated with greater improvement after a 6-week course of treatment. It is thought that a safe, effective dose is 1mg/kg bodyweight per day. The results of these studies delineate the pharmacologic and therapeutic effects of phenelzine and support a continuing role for MAO inhibitors in psychopharmacology. 36 references. (Author abstract modified)

000988 Samet, Michael G.; Levine, Jerome; Petrie, William M.; Guy, William. Perceptronics, Inc., 6271 Variel Avenue, Woodland Hills, CA **Utility assessment applied to the evaluation of drug efficacy.** Psychopharmacology Bulletin. 14(2):24-28, 1978.

Utility assessment applied to the evaluation of drug efficacy is described. A quantitative scale efficacy, associated with a matrix of possible joint outcomes of therapeutic and side-effects was empirically determined from judgments supplied by 30 experts in response to structured questionnaires. Principles and procedures from the utility assessment theory were applied to check on the validity of the scale. The performance of the raters showed a reasonably high degree of response consistency. An analysis of paired comparison judgments showed than the relative weights that raters put upon therapeutic effect in contrast to side-effects were significantly affected by the patient situation. When making relative judgments about the joint effect of a drug, raters were influenced much more by its therapetic effect when a psychiatric inpatient, as opposed to an outpatient is being treated. Similarly, the therapeutic effect carried more weight in judgments about outpatients when the level of illness is more severe. Analyses performed on the Interval Rating Form yielded nothing of practical significance. 2 references.

000989 Schwab, J. J.; Berger, A.; Traven, N.; Warheit, G. J. Department of Psychiatry and Behavioral Sciences, University of Louisville School of Medicine, Louisville, KY **Licit and illicit drugs: patterns of use.** In: Deniker, P., Neuropsychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1273-1281).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, results of an epidemiological study of drug use were reported. A survey of 1645 adults in a southeastern county showed that 36% had taken psychotropic medications, 26% sedatives, 14% stimulants, 9% hallucinogens, and 65% alcohol at some time in their lives. Psychotropic-agents were used by larger percentages of middle aged, female, white, widowed, and divorced respondents than by others; a similar pattern was seen for sedatives. Stimulants were used by larger percentages of younger, white, middle socioeconomic status (SES) groups and single and divorced respondents than by others; the use of these licit drugs appeared to be associated with emotional distress. Hallucinogens were used primarily by young, male, white, middle SES, single respondents, and use appeared to be related to cultural factors. Alcohol was used more frequently by young and middle-aged respondents, males, whites, upper SES groups, and single and divorced individuals than by their counterparts. The linear relationships between the frequency of alcohol use and high SES indicated that alcohol consumption may be a characteristic of upper SES lifestyles. 8 references. (Author abstract modified)

000990 Schwartz, J. C.; Costentin, J.; Martres, M. P.; Protais, P.; Baudry, M. Unite 109 de Neurobiologie, Centre Paul Broca de l'INSERM, 2ter, rue d'Alesia, F-75014 Paris, France **Modulation of receptor mechanisms in the CNS: hyper- and hyposensitivity to catecholamines.** Neuropharmacology (Oxford). 17(9):665-685, 1978.

Data regarding adaptive changes in receptor responsiveness to catecholamines in the central nervous system are reviewed. Topics discussed include hypersensitivity and hyposensitivity to noradrenaline, studied by the responsiveness of the cyclic adenosine monophosphate generating system in brain slices; hyposensitivity to the hyperthermic action of dopamine receptor stimulating agents; increased responsiveness of striatal dopamine receptors following interruption of dopaminergic transmission; and behavioral facilitation. The clinical implications of disuse hypersensitivity and hyposensitivity are discussed, with reference to drug tolerance and dependence, dyskinetic movement disorders, and psychoses. 32 references.

000991 Seeds, George M. 10921 Wilshire Boulevard, Los Angeles, CA 90024 **The use of drugs as an aid to counselors.** Marriage and Family Counselors Quarterly. 12(4):15-24, 1978.

Marriage and family counseling clients whose therapeutic course may benefit from the use of psychotherapeutically-active drugs are identified. These groups of drugs are analyzed and each group is classified according to its effect on the central nervous system's biochemical neurotransmitters. Case examples of patients are included to illustrate drug therapy from each of the drug groups: antipsychotics or neuroleptics; mood-active drugs; and hypnotics, sedatives, and minor tranquilizers. A drug summary listing categories, names, dosages, indications, and side-effects is provided. 5 references.

000992 Shader, Richard I.; Ciraulo, Dominic A.; Greenblatt, David J. 74 Fenwood Rd., Boston, MA 02115 **Drug interactions involving psychotropic drugs.** Psychosomatics. 19(11):671-673, 677-681, 1978.

The sites and mechanisms of drug interactions involved in psychopharmacologic treatment with a combination of drugs are classifed. Pharmacologic and pharmacokinetic interactions are summarized. Drug absorption, distribution, metabolism, and excretion are discussed as mechanisms by which drug interactions can occur. It is concluded that polypharmacy can be of benefit to some patients but is accompanied by an increased likelihood of adverse effects due to interactions. 83 references.

000993 Topiar, A.; Stevkova, K.; Rampacek, J. Psychiatric Hospital, Opava, Czechoslovakia **Pharmacotherapeutic census in a psychiatric hospital after ten years.** Activitas Nervosa Superior (Praha). 20(1):49, 1978.

In a paper read at the 19th Annual Psychopharmacological Meeting, held in Jesenik, Czechoslovakia during January 1977, a 10-year pharmacotherapeutic census of a psychiatric hospital is described. Chlorpromazine, which had been the leading drug in 1966, fell behind thioridazine. Perphenazine and chlortepine usage increased, as did the usage of depot and semidepot neuroleptics and lithium. Mephenhydrinate is no longer being prescribed, nor are inhibitors of monoaminooxidase and methylphenidate or phenmetrazine type of psychostimulants. Reserpine is losing importance and is prescribed only occasionally; the same is true of meprobamate.

000994 Trenholm, H. L. no address **Round table 4: contemporary drug abuse and pharmacopsychosis. Pattern of illicit and licit abuse (polydrug use).** In: Deniker, P., Neuropsychopharmacology. Oxford, Pergamon, 1978. 804 p. Vol. 2. (p. 1225-1290).

At the 10th Congress of the Collegium Internationale Neuro-Psychopharmacologicum, held in Quebec, July 1976, the fourth

round table session focused on drug abuse and pharmcopsychosis. Studies of drug dependence and pharmacopsychoses in humans and in animal models were described, with emphasis on adverse psychiatric reactions associated with amphetamine, marihuana, and morphine. Epidemiological studies of licit and illicit drug use were also presented.

000995 Usdin, Earl. National Institute of Mental Health, 5600 Fisher Lane, Rockville, MD 20857 **Classification of psychotropic drugs.** In: Clark, W., Principles of psychopharmacology. 2nd ed. New York, Academic Press, 1978. 976 p. (p. 193-246).

A table classifying psychotropic drugs used for therapeutic purposes is presented. Compounds are divided into the following classes: antidepressants, anxiolytics, antimanics, neuroleptics, and stimulants. The data contained in the table have been obtained from published literature, manufacturers, and distributors. Lists of terms classifying and describing the action of compounds are included. Topics discussed are: arrangement of compounds; synonyms, trade names, and manufacturers; structure and chemical names; and psychotropic actions and doses. 12 references.

000996 Villeneuve, Andre. Department of Psychiatry, Hopital de l'Enfant-Jesus, Quebec, P.Q., Canada **Therapeutic trials in tardive dyskinesia.** Canadian Psychiatric Association Journal (Ottawa). 23(6):411-415, 1978.

The variables involved in the assessment of the efficacy of an experimental drug treatment in tardive dyskinesia were investigated. The clinical investigation of this treatment technique is laborious and raises several problems that could account for the unpredictability and the discrepancies in results. Three problem categories are identified including patient variables, experimental treatment variables, and methodological variables. While prevention is still the best therapeutic approach, it is concluded that the pursuit of a rational therapeutic approach, based on biochemical hypotheses, taking into account the numerous variables, and using a sound methodology, could yield interesting therapeutic leads. 31 references.

000997 Walker, J. Ingram; Brodie, H. Keith H. Department of Psychiatry, Duke University, Durham, NC 27706 **Current concepts of lithium treatment and prophylaxis.** Journal of Continuing Education in Psychiatry. 39(4):19-30, 1978.

The history, pharmacology, clinical use, and toxicology of lithium treatment are discussed. A combination of all reported studies reveals a 60% to 100% improvement rate when lithium is used for the treatment of acute mania. A number of studies establishing the prophylactic efficacy of lithium for mania are discussed. Lithium prophylaxis was not effective in studies on patients who experienced one attack or in patients with a history of four or more attacks per year. It was shown to be effective in preventing recurrent depressive episodes and in unipolar depressives. Since lithium is an inferior treatment of schizophrenia, the importance of a thorough diagnostic evaluation for patients being considered for lithium treatment is emphasized. Cases in which lithium treatment would be inappropriate due to its high toxicity are discussed, including suicidal or impulsive patients. Dosage levels throughout the treatment period are discussed, as well as the effects of lithium used in combination with other psychotropic medication. Despite numerous unresolved dilemmas concerning lithium's physical and clinical effects, it is suggested that the drug is safe and effective for the treatment of manic depressive illness. 48 references.

000998 Zetler, G. Department of Pharmacology, Medical School of Lubeck, D-2400 Lubeck, Germany **Active peptides in the nervous tissue: historical prospects.** Advances in Biochemical Psychopharmacology. 18:1-21, 1978.

Recent research on pharmacologically-active peptides in the nervous system is reviewed. More than 20 pharmacologically-active peptides or factors of suspected peptide nature have been found in the nervous system, including oxytocin, vasopressin, hypothalamic releasing factors (somatostatin, thyrotropin releasing factor, luteinizing hormone releasing factor) substance-P, opioid peptides (endorphins and enkephalins), sleep-promoting peptides, learning-induced peptides (scotophobin and ameletin), neurotensin, gastrin, cholecystokinin, vasoactive intestinal peptide, and carnosine. Available evidence supports the concept of ""peptidergic" neurons in the central and peripheral nervous system. A given peptide may have more than one function, however. Instead of simply transmitting impulses synaptically, the peptides may modulate neuronal functions to produce specific changes in behavior. 233 references.

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DHHS Publication No. (ADM) 80-150
Printed 1980